



Potato Cost of Production for Idaho

2016 With Comparisons to 2015

University of Idaho
Extension

BUL 917 | By Ben Eborn

BUL 917: Potato Cost of Production for Idaho

2016 With Comparisons to 2015

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Report Submitted to:

Idaho Potato Commission
This project was funded by the Idaho Potato Commission.

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Cost of Potato Production in Idaho

THE OVERALL GOAL OF THIS PROJECT is to provide the Idaho potato industry with an unbiased and consistently calculated estimate of the cost of producing potatoes in three regions of Idaho and to track the change in production costs per acre and per hundredweight over time.

The following objectives are designed to meet the project goal:

1. To collect data from input suppliers, machinery and equipment dealers, and growers as appropriate.
2. To revise and update existing potato cost and return estimates to reflect current input costs and production practices.
3. To develop cost of production estimates for new varieties and/or new or proposed production systems as needed or as requested.
4. To calculate changes in production costs per acre and per hundredweight and include both the detailed and summary cost changes in an annual report.
5. To make the annual report available to the Idaho potato industry and to present the information as requested.
6. To maintain a Cost of Production Advisory Committee representing the different segments of the Idaho potato industry and to meet with this group to review the CAR estimates and to obtain input on proposed revisions.

I would like to acknowledge the cooperation and support that I receive from all segments of the Idaho

potato industry, including growers, processors, equipment dealers, and input suppliers. I would also like to thank the Idaho Potato Commission for the funding I receive to support this project. This project has been funded 23 of the past 25 years.

One major change for 2016 is that the project was contracted with Ben Eborn through the University of Idaho. Paul Patterson, who is the author of all previous reports, retired from the University of Idaho in 2015.

Cost of Production Background

No procedural changes were made in terms of how data were collected and processed. The cost of production estimates presented in this report are consistent with those previously produced by the University of Idaho. The cost of production estimates show the typical or representative production costs by region based on documented production practices. These are not area averages. To simplify comparisons with historical cost of production estimates, the publication code used by the University of Idaho was used for the six commercial potato budgets found in this report. Crop cost of production estimates and earlier reports can still be found at <http://www.uidaho.edu/cals/idaho-agbiz>

2016 Crop Input Costs

Prices used to value inputs in the 2016 potato cost and return (CAR) estimates based on data collected from input suppliers by the University of Idaho. Sources included irrigation districts and canal companies, agricultural lenders, crop insurance companies, trucking companies, aerial and other custom applicators, fuel suppliers, and chemical and fertilizer

dealers. Information on seed potato prices and the cost to cut and treat potato seed was taken from a survey of Idaho seed potato growers and commercial growers. A charge for handling and transportation is added to the FOB seed-farm-based seed potato prices to derive a seed potato cost for each region.

Machinery and equipment prices used in these cost of production estimates were mostly obtained from a survey of dealers conducted between August and December of 2010, and published in 2011 as PNW 346: The Cost of Owning and Operating Farm Machinery in the Pacific Northwest: 2011. These prices were increased by approximately 16% based on the annual change in USDA's Prices Paid Machinery Index from 2011 to 2016.

Potato Cost of Production Overview

Cost of production estimates are influenced by assumptions made in depicting a representative or typical farm. Farm size and acreage planted to different crops will influence costs, particularly machinery ownership costs. It is important to recognize this when making comparisons between regions where assumptions differ or within a region over time as the underlying assumptions change. The University of Idaho currently publishes seven potato CAR estimates. Six CAR estimates are for commercial potato production and one is for seed production. Only the commercial potato cost of production estimates are included in this report. Prior to 2013, there was a separate non-storage (with transloading) and storage budgets for each of the three southern Idaho commercial production regions. The current format, adopted in 2013, shows the cost to grow, harvest and sort potatoes in the base budget, including all costs to the "end of the piler boom." Storage costs are shown in a separate table and begin with the base budget values. A list of CAR estimates by region and variety is found in Table 1.

Farm Size and Potato Acreage

Table 2 shows the farm size and potato acreage for each region's model farm since 2009. The size of the model farm and the number of potato acres were increased in 2013 for all three regions.

In general, operating costs are not influenced by farm size. However, ownership costs do change with

farm size, primarily because of economies of size and scale with equipment. Equipment ownership costs per acre are strongly influenced by the number of acres over which these costs are spread. The more acres, the lower the cost. In establishing the farm size and selecting the machinery assortment, we attempt to achieve an economically efficient combination. Equipment that is under-utilized has high ownership costs, while equipment with too many hours of use results in unrealistically low ownership costs.

Input Costs

Some input prices are region specific, while others are standardized for the entire state since they don't vary consistently by region. Table 3 contains information on three such items: interest rates, labor wage and benefit rates, and power cost per acre-inch of water applied based on Idaho Power's Irrigation Service Schedule 24. Table 3 presents values for 2013–2016, and the percentage changes from 2015 to 2016. In the costs and returns estimates, interest is charged from the time expenditures are made until the harvest month using the operating interest rate shown in Table 3. Operating interest is identified as a separate line item in the CAR estimates. The intermediate interest rate is used in calculating non-cash machinery costs.

The labor used in crop production falls into one of the six classes shown in Table 3. Labor used to operate machinery, drive trucks, and manage pivot irrigation systems, including chemigation and fertigation, receive a higher wage than irrigation labor used on set-move systems (hand lines and wheel lines) and unskilled general farm labor used primarily during harvest to pick clods and rocks and to help with storage and trans-loading operations. Prior to 2012, irrigation labor was not differentiated between set-move and continuous move irrigation systems. The labor costs include the base wage rate plus payroll taxes and benefits costs, shown as a percentage. Additional labor information is included in the background and assumptions page that accompanies each CAR estimate.

While Idaho Power's service area does not extend to all irrigated areas of southern Idaho, it is by far the largest supplier of power to Idaho farms and ranches and that is why it is used in the CAR estimates. The power rates shown in Table 3 are used with a center pivot irrigation system to derive the cost per acre-inch of water

applied. The power demand used in the calculation is for pressurization only. The standard assumption for each region is that surface water is delivered to the farm from a canal. Cost per acre-inch of water applied by different irrigation systems and with different pumping lifts have traditionally been found in Table 3 of the University of Idaho's annual Crop Input Cost Summary.

Tables 4-a, 4-b and 4-c contain cost information on commonly used inputs where prices generally vary by region. These include fuel (gas, farm diesel and road diesel) and irrigation water assessments. Table 4-a shows these costs for southwestern Idaho, Table 4-b shows the costs for southcentral Idaho and Table 4-c shows the costs for eastern Idaho.

Prior to 2008, fuel prices were determined by a survey conducted at a single point in time, which typically was in August. Since 2008, fuel prices found in the Crop Input Cost Summary and used in CAR estimates are the simple average of prices collected at four times during the year: February, April, June and August. This change was made at the request of the potato cost of production advisory committee.

Table 5 contains the fertilizer component prices from 2013 through 2016 used in the CAR estimates, and the percentage changes from 2015 to 2016. Prior to 2009, fertilizer prices were collected and summarized separately for the three southern Idaho regions.

Potato Yields

The yield in a CAR estimate is used to calculate gross revenue and break-even prices needed to cover costs in different categories. Yield is also the basis for certain costs, such as promotion or inspection fees paid by growers. Yield also drives storage and sorting costs, which are calculated on a hundredweight basis. Table 6 shows the potato yields used in the University of Idaho's 2016 commercial potato CAR estimates, as well as the previous four years. Some values are shown only as a reference and indicate the value we would use if the University of Idaho published a CAR estimate for that area and with those production practices. Only those values shown in bold type are used in CAR estimates.

Prior to 1991 there was not a consistent method used to determine potato yields in CAR estimates for all three regions. Starting in 1991, yields in all

three regions were based on USDA-NASS county or regional-level yield data. From 1991 to 1995, the yield was calculated using a 5-year rolling average. From 1995 through 2003 the yields used were based on a projected yield using exponential smoothing with an alpha value of 0.20. This procedure eliminated the negative bias that resulted from using historical data to calculate averages when yields were increasing rapidly. Unfortunately, exponential smoothing also produced projected yields that varied widely from actual yield when potato yield variation from one year to the next was substantial. To avoid this problem, the yield calculation for CAR estimates was switched to a projected 3-year average starting in 2005. For 2006, the 3-year average consisted of two years of historical data and the third year was projected, based on the November USDA crop production report. Starting in 2007, the 3-year average was switched to the three most recent years of published USDA data. For the 2016 CAR estimates, yield data for the 2013, 2014 and 2015 crops were used. The 2016 county-level data for Idaho will not be published until October 2017, so the yields used in calculating the average will always be lagged by one year. Yields used in the CAR estimates are rounded to the nearest 5 hundredweight. These base area yields are then adjusted to account for fumigation, a procedure described later in the report.

For crop reporting purposes, the Idaho NASS Field Office breaks Idaho into regions. The USDA calculates potato yields both for individual counties within a region and for the region itself. The yield estimates used in southwestern and southcentral Idaho CAR estimates are based on the USDA-NASS regions and includes all the counties in that region. Prior to 2001, yields in eastern Idaho CAR estimates were based on four major commercial potato counties: Bannock, Bingham, Bonneville and Power. Starting in 2001, separate CAR estimates were made for commercial potato production in the southern counties: Bannock, Bingham and Power; and the northern counties: Bonneville, Jefferson and Madison. Starting in 2012, Jefferson County was removed from the northern counties' average. (See Tables 6–8.)

Because of changes in how yields were calculated and other procedural changes, it can be difficult to make historical comparisons going back more than one year. In this report when procedural changes occur in cost calculations, the previous year's CAR estimate

is re-calculated using the new procedure so that the year-to-year change is based on the price and quantity change of inputs, not based on procedural changes. Because of this, the resulting costs for the previous year can be different than those published the previous year.

The potato yields for the non-fumigated 2016 CAR estimates are 10 cwt lower than 2015 for southwestern Idaho, 5 cwt higher for southcentral Idaho, and 5 cwt lower for eastern-South Idaho. The potato yields for the fumigated 2016 CAR estimates are 10 cwt lower than 2015 for southwestern, 5 cwt higher for southcentral Idaho, and 5 cwt lower for eastern-South, while eastern-North was unchanged. (See Table 6.) Note that for the sixth year, the yield for Southwestern Idaho uses the Russet Burbank Adjusted Yield, which is 97% of the region's average yield. The increasing use of higher yielding varieties, such as Ranger Russet, made this adjustment necessary.

The following section explains how the yield values used in the fumigation and non-fumigation CAR estimates are derived.

Fumigation Yield and Cost Allocation Dilemma

Fumigation can have a significant impact on per acre production costs and can also have a large impact on potato yield and quality. For an individual grower, this does not pose a problem because the cost and yield increases correspond. In budgeting procedures used to generate potato CAR estimates, the cost increase is not a problem when fumigation is included. There are, however, two yield questions that must be considered. The first question: how much of a yield increase should be attributed to fumigation? The second question: what should the base yield in the non-fumigation CAR estimate be? Since the county and regional yields published by USDA contain both fumigated and non-fumigated potato acreage, USDA values are not appropriate for either a CAR estimate with fumigation or one without fumigation unless some attempt is made to identify and separate the fumigation yield impact in the data.

Historic yields based on USDA data are too low if used in a CAR estimate with the full cost of fumigation included. Historic yields are too high if used in a CAR estimate when no fumigation cost is included.

Including only a partial cost for fumigation would be appropriate in calculating average production costs, but not for calculating typical costs where fumigation is either used or it is not. In addition, the methods used by the University of Idaho to obtain farmer production practice data is not consistent with calculating average production costs for a region. Using the USDA yield data and including a partial fumigation cost in a typical budget is not appropriate as it gives the appearance that fumigation is less expensive than it actually is.

The USDA county-level or regional potato yield data are used to calculate a 3-year average yield for a given area. These procedures were discussed in the previous section. This base area yield value is set equal to the weighted average of the fumigated yield and the non-fumigated yield as shown in the following formula. The weights are estimated percentages of potato acres in that region that are fumigated and not fumigated, respectively. The yield adjustment attributable to fumigation as well as the estimated percentage of acres fumigated in each region is shown in Table 9.

Fumigation Yield Adjustment Factor

$$\frac{(\% \text{ of acres not fumigated} \times Y) + (\% \text{ acres fumigated} \times FY)}{\text{Area Average Yield}},$$

Where **Y** = non-fumigation yield,
FY = fumigation yield, and
FY = **Y** + fumigation yield adjustment

The following example illustrates how the fumigation adjustment factor was used, given an area yield of 400 cwt, with 60 percent of the potato acreage fumigated and a fumigation yield adjustment of 50 hundredweight per acre. Set up the equation as shown below and solve for Y.

$$\begin{aligned} 0.4Y + 0.6(Y+50) &= 400 \\ 0.4Y + 0.6Y + 30 &= 400 \\ 1.0Y + 30 &= 400 \\ Y &= 370 \\ \text{And } FY &= 420 \\ \text{Check: } 0.4 \times 370 + 0.6 \times 420 &= 400 \end{aligned}$$

Fumigation yield in this example is 420 and non-fumigation yield is 370, while the area average is 400. The fumigation CAR estimate would include the full cost of fumigation and the non-fumigation would have no fumigation costs. Thus, the costs and yields would correspond.

Note: There are limitations to this type of adjustment and there is a lack of publicly available data on which to base fumigation estimates. While not perfect,

using this methodology does reduce the previous negative bias that occurred when calculating costs per hundredweight when the benefit of fumigation on yield was included in the region or county yields but the cost of fumigation was not. Using the percentages of acres fumigated from Table 9 and the number of potato acres grown in each region produces a statewide weighted-average of approximately 50 percent of the potato acreage being fumigated. This falls within the range of values of 50–60 percent given by knowledgeable people in the industry.

Unresolved Yield Issue: Field-Run vs. Paid

Regardless of how the area potato yields are calculated, how does this yield compare to the grower's paid yield? The answer will vary depending on whether the potatoes are sold in the fresh or in the process market. The yield data from USDA includes all tubers greater than 1.5 inches. Since the University of Idaho CAR estimates do not segment yield into size and grade components that would sell for different prices, the breakeven prices shown in the CAR estimates are what the grower would have to average if paid on a field-run yield in order to cover costs. The issue of paid yield is dealt with in the storage tables for each crop budget found in appendix tables A-2, B-2, C-2, D-2, E-2 and F-2. One column in each table shows the field-run breakeven prices and an adjacent column shows paid-yield breakeven prices for an assumed paid yield of 95%.

2016 Cost of Potato Production Overview and Comparison

Direct comparisons with previously published estimates should not be made without accounting for differences in procedures and assumptions. There are no longer separate storage and non-storage potato budgets as had been published for many years. The base budget contains the operating cost of sorting potatoes, including labor, electricity and repair costs, as well as the ownership costs associated with the equipment used in the operation. Costs in the base budget are to “the end of the piler boom.” If potatoes are being transloaded and hauled to a processor or fresh-pack shed, the cost of hauling would need to be added. Storage costs are added to the base cost in

a separate table, and include the storage ownership costs, annual repairs, and monthly storage operating costs. This is done on both a field-run and paid-yield basis.

Table 10-A summarizes the dollar cost per acre and percentage changes from 2015 to 2016 for major input cost categories, total operating, total ownership, and total costs for the Idaho fumigated cost of production estimates. Table 10-B contains the same information for Idaho's non-fumigated cost of potato production estimates.

Detailed cost of production estimates for 2015 and 2016 from which the data in Tables 10-A and 10-B were taken are found in the appendix. Appendix A, B, and C contain the fumigated cost of production estimates for southwestern, southcentral and the eastern south region, respectively, while Appendix D, E, and F contain the non-fumigated cost of production estimates for southcentral, eastern south, and eastern north regions, respectively.

In general, the cost of seed and cutting was higher, and the cost of hauling seed was lower. Fertilizer, pesticides and chemicals, custom and consultants were all lower. The lower cost of pesticides and chemicals includes both the lower prices of some products and a consistent or decreased number of foliar applications of insecticides and fungicides. The cost of power was up in 2016, because of the increased PCA rate. (See Table 3 for more detail.) No adjustment was made to the quantity of water applied and irrigation repair costs increased. Fuel costs were lower (Table 4), and provided substantial cost savings. Higher repair costs on machinery offset only a small portion of the lower fuel costs, keeping overall machinery operating expenses substantially lower in 2016. Labor costs were up approximately 3.5% across the board. Interest rates on borrowed capital were up slightly.

Overall, operating costs per acre and per hundredweight were lower in 2016. Operating costs per acre decreased between \$135 and \$260 per acre, or 38 to 53 cents per hundredweight. Ownership costs per acre were up in some regions and down in other regions, reflecting both higher equipment costs, which pushes up depreciation and interest (capital recovery), and higher land costs. Ownership costs varied from up 2 cents to down 6 cents per hundredweight.

Total costs per acre and per hundredweight were down in all three regions. With a yield decrease in southwestern and southeastern Idaho, the percentage change in total costs per hundredweight were the greatest of any region. Total costs per acre decreases ranged from \$143 to \$276, while total cost per hundredweight decreased by 38 to 59 cents.

Cost of Production Summaries and Comparisons by Region

Tables 11-A and 11-B summarize production costs for 2015 and 2016 for operating, ownership and total costs per acre, as well as per-acre dollar and percentage changes between these years. Table 11-A presents the fumigated budgets, and Table 11-B contains the non-fumigated budgets. Tables 12-A and 12-B summarize production costs for 2015 and 2016 for operating, ownership and total costs per hundredweight, and the change per hundredweight and percentage between years. Because the yields used in budgets for 2016 were different than those used in 2015, the percentage changes per hundredweight were different than the percentage changes per acre.

The total cost to raise, harvest and sort potatoes in the three regions of southern Idaho for 2016 presented in this report ranged from a low of \$2,236 per acre in eastern Idaho-north (nonfumigation) up to \$3,466 in southwestern Idaho (with fumigation). (See Tables 11-A and 11-B.) There is a 55% difference from low to high. The range in values per hundredweight is not so extreme; only a 10% difference. The 2016 total cost to raise, harvest and sort potatoes ranged from \$6.21 per hundredweight in eastern Idaho-north, up to \$6.86 in southwestern Idaho. (See Tables 12-A and 12-B.)

Adjustments for 2016

There were a number of product changes in the potato cost of production estimates shown in this report, as well as quantity changes on some inputs. These changes were primarily associated with foliar fungicides and foliar insecticides. Changes in products or quantities shown in the detailed cost estimates found in the appendices are shown in green.

Table 1. Idaho potato costs and returns estimates by region for 2016.

| Region/Publication No. | Variety | Fumigation | Storage Costs |
|-------------------------------|----------------|------------|---------------|
| Commercial Potatoes | | | |
| <u>Southwestern:</u> | | | |
| EBB2-Po2-16 | Russet Burbank | Yes | Yes |
| <u>Southcentral:</u> | | | |
| EBB3-Po2-16 | Russet Burbank | No | Yes |
| EBB3-Po3-16 | Russet Burbank | Yes | Yes |
| <u>Eastern - S. Counties:</u> | | | |
| EBB4-Po5-16 | Russet Burbank | No | Yes |
| EBB4-Po6-16 | Russet Burbank | Yes | Yes |
| <u>Eastern - N. Counties:</u> | | | |
| EBB4-Po2-16 | Russet Burbank | No | Yes |

Eastern - South Counties: Bannock, Bingham and Powder.

Eastern - North Counties: Bonneville and Madison; Jefferson County was dropped in 2012.

Note: the potato publication codes (EBB2-Po1-16 for example) are used in this report to simplify historical comparisons.

Table 2. Model farm size acres and potato acreage by Idaho region.

| | 2009 – 2012 | | 2013 – 2016 | |
|--------------|-------------|--------|-------------|--------|
| | Farm | Potato | Farm | Potato |
| Southwestern | 1200 | 300 | 1600 | 500 |
| Southcentral | 1800 | 450 | 2200 | 550 |
| Eastern | 1800 | 600 | 2400 | 800 |

Table 3. Interest rates, labor charges and power rates used in CAR estimates: 2013 – 2016 and percentage changes from 2015 to 2016.

| | 2013 | 2014 | 2015 | 2016 | Change |
|--|-----------|-----------|-----------|-----------|--------|
| Operating Interest Rate | 5.75% | 6.00% | 5.75% | 6.00% | 4.3% |
| Intermediate Interest Rate | 6.00% | 5.75% | 5.50% | 5.75% | 4.5% |
| Labor Class (overhead) | | | | | |
| Equipment Operator Labor (25%) | \$17.80 | \$18.10 | \$18.50 | \$19.15 | 3.5% |
| Truck Driver Labor | \$13.80 | \$14.05 | \$14.40 | \$14.90 | 3.5% |
| Irrigation Labor: HL & WL (30%) | \$12.60 | \$12.85 | \$13.15 | \$13.60 | 3.4% |
| Irrigation Labor: CP (25%) | \$17.80 | \$18.10 | \$18.50 | \$19.15 | 3.5% |
| Irrigation Labor: Chem-Fert (25%) | \$17.80 | \$18.10 | \$18.50 | \$19.15 | 3.5% |
| General Farm Labor (15%) | \$10.25 | \$10.40 | \$10.65 | \$11.00 | 3.3% |
| Power Rate: Idaho Power Irrigation Service Schedule 24 | | | | | |
| Monthly Service Charge | \$22.00 | \$22.00 | \$22.00 | \$22.00 | 0.0% |
| Demand Charge | \$7.01 | \$7.01 | \$7.01 | \$7.01 | 0.0% |
| Base Rate: per kWh | | | | | |
| First 164 kWh per kW of demand | \$0.04913 | \$0.05645 | \$0.05645 | \$0.05645 | 0.0% |
| All other kWh per kW of demand | \$0.05060 | \$0.05792 | \$0.05792 | \$0.05492 | 0.0% |
| | 0.04767 | \$0.05499 | \$0.05499 | \$0.05499 | 0.0% |
| Power Cost Adjustment per kWh | \$0.01176 | \$0.00526 | \$0.00444 | \$0.00567 | 24.9% |
| Effective Rate: per kWh | \$0.06090 | \$0.06172 | \$0.06089 | \$0.06212 | 2.0% |
| Pumping Cost per Acre Inch | \$1.90 | \$1.91 | \$1.90 | \$1.94 | 2.1% |

Pumping cost is calculated using Idaho Power Company rates for a 160-acre center pivot with a corner system: with 69% pumping plant efficiency and zero lift.

Table 4-a. Current and historical fuel and water assessment prices for Southwestern Idaho: 2013 – 2016 and percentage change from 2015 to 2016.

| | 2013 | 2014 | 2015 | 2016 | Change |
|------------------|---------|---------|---------|---------|--------|
| Gasoline | \$3.70 | \$3.60 | \$2.65 | \$2.35 | -11.3% |
| Off-Road Diesel | \$3.70 | \$3.55 | \$2.45 | \$2.35 | -14.3% |
| Road Diesel | \$4.10 | \$4.05 | \$2.95 | \$2.55 | -13.6% |
| Water Assessment | \$48.85 | \$50.60 | \$50.60 | \$53.50 | 5.7% |

Table 4-b. Current and historical fuel and water assessment prices for Southcentral Idaho: 2013 – 2016 and percentage change from 2015 to 2016.

| | 2013 | 2014 | 2015 | 2016 | Change |
|------------------|---------|---------|---------|---------|--------|
| Gasoline | \$3.60 | \$3.55 | \$2.50 | \$2.20 | -12.0% |
| Off-Road Diesel | \$3.55 | \$3.50 | \$2.30 | \$1.95 | -15.2% |
| Road Diesel | \$4.10 | \$4.00 | \$2.85 | \$2.45 | -14.0% |
| Water Assessment | \$45.30 | \$45.60 | \$45.60 | \$47.50 | 4.2% |

Table 4-c. Current and historical fuel and water assessment prices for Eastern Idaho: 2013 – 2016 and percentage change from 2015 to 2016.

| | 2013 | 2014 | 2015 | 2016 | Change |
|-------------------------|---------|---------|---------|---------|--------|
| Gasoline | \$3.60 | \$3.50 | \$2.50 | \$2.20 | -12.0% |
| Off-Road Diesel | \$3.50 | \$3.45 | \$2.35 | \$2.00 | -14.9% |
| Road Diesel | \$4.00 | \$3.95 | \$2.85 | \$2.45 | -14.0% |
| Water Assessment: All | \$15.80 | \$15.90 | \$15.90 | \$16.70 | 5.0% |
| E. Idaho South District | \$35.00 | \$35.00 | \$35.00 | \$37.00 | 5.7% |
| E. Idaho North District | \$11.95 | \$12.05 | \$12.05 | \$12.50 | 3.7% |

Table 5. Current and historical fertilizer components prices for South-eastern Idaho: 2013 – 2016 and percentage change from 2015 to 2016.

| | 2013 | 2014 | 2015 | 2016 | Change |
|---|--------|--------|--------|--------|--------|
| Dry Nitrogen (46-0-0) | \$0.66 | \$0.58 | \$0.55 | \$0.41 | -25.5% |
| Liquid Nitrogen (32-0-0) | \$0.82 | \$0.72 | \$0.73 | \$0.48 | -34.2% |
| P ² O ⁵ Dry (11-52-0)* | \$0.53 | \$0.48 | \$0.53 | \$0.37 | -30.2% |
| P ² O ⁵ Liquid (10-34-0)* | \$0.76 | \$0.61 | \$0.72 | \$0.60 | -16.7% |
| K ₂ O (0-0-60) | \$0.50 | \$0.41 | \$0.44 | \$0.29 | -34.1% |
| Sulfur | \$0.25 | \$0.25 | \$0.27 | \$0.23 | -14.8% |

*Nitrogen in 11-52-0 and 10-34-0 was valued at the price of N in urea and solution 32, respectively.

Table 6. Calculated potato yields used in published University of Idaho costs and returns estimates by region, both with and without fumigation: 2012 - 2016.*

| Area | 2012 | 2013 | 2014 | 2015 | 2016 |
|--|------|------|------|------|------|
| | cwt | cwt | cwt | cwt | cwt |
| Southwest Region: Base Yield | 528 | 538 | 530 | 522 | 512 |
| Potatoes: No Fumigation | 485 | 490 | 490 | 480 | 470 |
| Potatoes: Fumigation | 550 | 550 | 540 | 530 | 520 |
| Adj. Russet Burbank: Fumigation | 530 | 530 | 525 | 515 | 505 |
| Southcentral Region: Base Yield | 440 | 431 | 443 | 449 | 456 |
| Russet Burbank: No Fumigation | 415 | 410 | 420 | 425 | 430 |
| Russet Burbank: Fumigation | 470 | 445 | 465 | 470 | 475 |
| Eastern Region: Russet Burbank: | | | | | |
| South Counties*: Base Yield | 395 | 392 | 395 | 400 | 395 |
| South: No Fumigation | 375 | 375 | 380 | 385 | 380 |
| South: Fumigation | 420 | 410 | 420 | 425 | 420 |
| North Counties*: Base Yield | 360 | 360 | 368 | 373 | 374 |
| North: No Fumigation | 350 | 350 | 355 | 360 | 360 |
| North: Fumigation | 390 | 380 | 385 | 390 | 390 |

Note: Values in bold indicate published CAR estimates. There are no published CAR estimates for those not in bold. These are shown only for reference and comparison.

*Eastern Idaho North Counties: Bonneville and Madison: Jefferson County was dropped in 2012.

*Eastern Idaho South Counties: Bannock, Bingham and Power.

Note: Russet Burbank adjustment factor on SWI is -3% . This was first used in 2011.

Table 7. Potato yields published by USDA for crop years 2011 – 2015 and the 3-year averages based on the most recent published data.

| Area | 2011 | 2012 | 2013 | 2014 | 2015 | 3-Year Average |
|---------------------|------|------|------|------|------|----------------|
| Southwest Region | 540 | 530 | 520 | 515 | 500 | 512 |
| Southcentral Region | 429 | 435 | 465 | 447 | na | 456 |
| Eastern Region | 383 | 394 | 388 | 395 | 386 | 390 |
| South District | 399 | 406 | 395 | 400 | 391 | 395 |
| North District | 369 | 373 | 364 | 383 | 375 | 374 |

Source: USDA-NASS.

Note: Yields for Eastern - North District are the revised yields that include only Bonneville and Madison Counties. South District contains only Bingham County data. Power and Bannock not published.

Table 8. Historical potato yields published by USDA for the primary commercial potato counties in Eastern Idaho for 2011 – 2015 and historical 3-year average for crop year.

| Area | 2011 | 2012 | 2013 | 2014 | 2015 | 3-Year Average |
|--------------------------------|------|------|------|------|------|----------------|
| North District Counties | | | | | | |
| Bonneville | 370 | 360 | 359 | 381 | na | 370 |
| Madison | 367 | 385 | 369 | 384 | 379 | 377 |
| 2-County Average | 369 | 372 | 364 | 383 | | 374 |
| Jefferson | 471 | na | na | na | na | |
| South District Counties | | | | | | |
| Bannock | na | 400 | na | na | na | |
| Bingham | 384 | 406 | 395 | 400 | 391 | 395 |
| Power | 414 | na | na | na | na | |
| 3-County Average | 399 | 403 | | | | |

Source: USDA-NASS.

Note: Jefferson County was dropped from the North District in 2012 (2011 potato crop 'year). Values for previous years were re-calculated using only Bonneville and Madison Counties. 3-Year averages are based on the last three years where data was published.

Note: County-level data was not published for either Bannock or Power Counties for 2013-2015.

Table 9. Fumigation percentage by region and yield adjustment factors by region.

| Region | Acres Fumigated | Fumigation Adjustment |
|----------------|-----------------|-----------------------|
| Southwestern | 80% | + 50 cwt |
| Southcentral | 60% | + 40 cwt |
| Southeastern | | |
| South District | 50% | + 35 cwt |
| North District | 40% | + 30 cwt |

Notes:

Southwestern increased from 65% to 80% in 2013 and yield increase dropped from 65 to 50 cwt.

Southcentral increased from 55% to 60% in 2013 and yield increase dropped from 55 to 40 cwt.

South District increased from 45% to 50% in 2013 and yield increase dropped from 45 to 35 cwt.

North District increased from 30% to 45% in 2013 and yield increased dropped from 40 to 30 cwt.

Table 10-A. Change in per-acre cost of production by major cost category from 2015 to 2016 for fumigated Russet Burbank potatoes in three production regions of Idaho.

| Item | Southwestern Idaho Change from 2015 Fumigated EBB4-Po2 | | Southcentral Idaho Change from 2015 Fumigated EBB3-Po3 | | Eastern Idaho - S. Change from 2015 Fumigated EBB4-Po6 | |
|-----------------------------------|--|--------|--|--------|--|--------|
| | | | | | | |
| Yield | -10 | -1.9% | 5 | 1.1% | -5 | -1.2% |
| Operating Inputs | \$ | % | \$ | % | \$ | % |
| Seed & Cutting | \$7.20 | 2.0% | \$9.20 | 2.8% | \$9.45 | 3.3% |
| Fertilizer | -\$144.10 | -26.4% | -\$131.45 | -26.9% | -\$120.85 | -27.0% |
| Chemicals & Pesticides | -\$86.58 | -13.7% | -\$56.42 | -10.4% | -\$82.25 | -17.3% |
| Custom & Consultants | -\$28.25 | -17.9% | -\$32.00 | -20.3% | -\$11.25 | -9.4% |
| Irrigation: Water, Power, Repairs | \$4.45 | 3.6% | \$3.35 | 2.9% | \$3.27 | 3.4% |
| Machinery: Fuel & Repairs | -\$11.73 | -7.6% | -\$10.23 | -8.2% | -\$10.54 | -8.3% |
| Field Labor | \$7.72 | 3.5% | \$6.13 | 3.5% | \$5.48 | 3.5% |
| Sorting: Labor, Repairs & Power | \$0.30 | 0.4% | \$2.32 | 3.5% | \$0.72 | 1.2% |
| Other: Fees & Crop Insurance | -\$1.62 | -1.0% | \$0.90 | 0.6% | -\$0.72 | -0.5% |
| Operating Interest | -\$6.91 | -8.2% | -\$2.94 | -4.0% | -\$3.57 | -5.5% |
| Total Operating Costs | -\$259.52 | -10.3% | -\$211.14 | -9.5% | -\$210.24 | -10.5% |
| Operating Costs per Cwt | -\$0.42 | -8.6% | -\$0.49 | -10.4% | -\$0.44 | -9.5% |
| Ownership Costs | | | | | | |
| Tractors, Trucks & Field Equip. | \$3.00 | 1.5% | \$2.00 | 1.1% | \$2.00 | 1.2% |
| Potato Handling Equipment | \$2.00 | 2.7% | \$1.50 | 2.2% | \$1.50 | 2.5% |
| Land* | \$0.00 | 0.0% | \$0.00 | 0.0% | \$0.00 | 0.0% |
| Overhead | -\$7.00 | -11.1% | -\$4.50 | -8.0% | -\$5.00 | -10.0% |
| Management Fee | -\$14.00 | -7.5% | -\$9.00 | -5.4% | -\$10.00 | -6.8% |
| Total Ownership Costs | -\$15.82 | -1.3% | -\$9.83 | -0.9% | -\$11.35 | -1.2% |
| Ownership Costs per Cwt | \$0.02 | 0.7% | -\$0.05 | -1.9% | \$0.00 | 0.0% |
| Total Costs | | | | | | |
| Total Costs per Acre | -\$275.34 | -7.4% | -\$220.97 | -6.6% | -\$221.59 | -7.5% |
| Total Costs per Cwt | -\$0.40 | -5.5% | -\$0.54 | -7.6% | -\$0.44 | -6.4% |

Note: Cost of production refers to the cost to grow, harvest and sort potatoes. The cost of on-farm storage is not included. See appendix for detailed cost comparison and for storage costs by month.

Table 10-B. Change in per-acre cost of production by major cost category from 2015 to 2016 for non-fumigated Russet Burbank potatoes in three production regions of Idaho.

| Item | Southcentral Idaho Change from 2015 Non-Fumigated EBB4-Po2 | | Eastern Idaho - S. Change from 2015 Non-Fumigated EBB3-Po3 | | Eastern Idaho - N. Change from 2015 Non-Fumigated EBB4-Po6 | |
|-----------------------------------|--|----------|--|----------|--|----------|
| | | | | | | |
| Yield | 5 | 1.2% | -5 | -1.3% | 0 | 0.0% |
| Operating Inputs | \$ | % | \$ | % | \$ | % |
| Seed & Cutting | \$9.20 | 2.8% | \$9.45 | 3.3% | \$10.50 | 3.8% |
| Fertilizer | -\$120.60 | -26.8% | -\$109.35 | -26.4% | -\$96.00 | -24.6% |
| Chemicals & Pesticides | -\$61.17 | -19.2% | -\$56.05 | -21.0% | -\$35.83 | -15.0% |
| Custom & Consultants | -\$30.00 | -26.5% | -\$9.25 | -12.2% | -\$9.00 | -13.4% |
| Irrigation: Water, Power, Repairs | \$3.25 | 2.9% | \$3.20 | 3.4% | \$1.40 | 2.1% |
| Machinery: Fuel & Repairs | -\$10.22 | -8.2% | -\$10.49 | -8.3% | -\$10.82 | -8.6% |
| Field Labor | \$5.92 | 3.5% | \$5.38 | 3.5% | \$5.44 | 3.5% |
| Sorting: Labor, Repairs & Power | \$2.17 | 3.6% | \$0.58 | 1.1% | \$1.22 | 2.4% |
| Other: Fees & Crop Insurance | \$0.90 | 0.7% | -\$0.90 | -0.6% | \$0.00 | 0.0% |
| Operating Interest | -\$4.46 | -8.2% | -\$2.10 | -4.4% | -\$1.60 | -3.6% |
| Total Operating Costs | -\$205.01 | -11.0% | -\$169.52 | -10.2% | -\$134.69 | -8.7% |
| Operating Costs per Cwt | -\$0.53 | -12.0% | -\$0.39 | -9.0% | -\$0.37 | -8.7% |
| Ownership Costs | | | | | | |
| Tractors, Trucks & Field Equip. | \$3.00 | 1.6% | \$2.00 | 1.2% | \$2.00 | 1.2% |
| Potato Handling Equipment | \$1.50 | 2.5% | \$1.50 | 2.7% | \$1.00 | 1.9% |
| Land* | \$0.00 | 0.0% | \$0.00 | 0.0% | \$0.00 | 0.0% |
| Overhead | -\$6.00 | -12.8% | -\$4.00 | -9.5% | -\$3.50 | -9.0% |
| Management Fee | -\$12.00 | -8.2% | -\$8.00 | -6.2% | -\$7.00 | -5.9% |
| Total Ownership Costs | -\$13.33 | -1.2% | -\$8.35 | -0.9% | -\$7.35 | -0.9% |
| Ownership Costs per Cwt | -\$0.06 | -2.4% | \$0.01 | 0.4% | -\$0.02 | -0.9% |
| Total Costs | | | | | | |
| Total Costs per Acre | -\$218.34 | -7.4% | -\$177.87 | -6.8% | -\$142.04 | -6.0% |
| Total Costs per Cwt | -\$0.59 | -8.5% | -\$0.38 | -5.6% | -\$0.39 | -6.0% |

Note: Cost of production refers to the cost to grow, harvest and sort potatoes. The cost of on-farm storage is not included. See appendix for detailed cost comparison and for storage costs by month.

Table 11-A. Cost of production per acre for irrigated Russet Burbank potatoes by region for 2015 and 2016 and change in costs between these years.

| | Southwestern Russet Burbank with Fumigation Po2 | Southcentral Russet Burbank with Fumigation Po3 | Eastern - South Russet Burbank with Fumigation Po6 |
|---------------------|--|--|---|
| 2015 Operating Cost | \$2,511 | \$2,228 | \$1,993 |
| 2016 Operating Cost | \$2,250 | \$2,016 | \$1,782 |
| \$ Change | -\$260 | -\$212 | -\$211 |
| % Change | -10.4% | -9.5% | -10.6% |
| 2015 Ownership Cost | \$1,232 | \$1,111 | \$971 |
| 2016 Ownership Cost | \$1,216 | \$1,101 | \$960 |
| \$ Change | -\$16 | -\$10 | -\$11 |
| % Change | -1.3% | -0.9% | -1.2% |
| 2015 Total Cost | \$3,743 | \$3,339 | \$2,964 |
| 2016 Total Cost | \$3,466 | \$3,117 | \$2,742 |
| \$ Change | -\$276 | -\$222 | \$222 |
| % Change | -7.4% | -6.5% | -7.5% |

Note: values are rounded and may not add up.

Table 12-A. Cost of production per cwt for irrigated Russet Burbank potatoes by region for 2015 and 2016 and change in costs between these years.

| | Southwestern Russet Burbank with Fumigation Po2 | Southcentral Russet Burbank with Fumigation Po3 | Eastern - South Russet Burbank with Fumigation Po6 |
|---------------------|--|--|---|
| 2015 Operating Cost | \$4.88 | \$4.74 | \$4.69 |
| 2016 Operating Cost | \$4.46 | \$4.25 | \$4.25 |
| \$ Change | -\$0.42 | -\$0.49 | -\$0.44 |
| % Change | -8.6% | -10.4% | -9.5% |
| 2015 Ownership Cost | \$2.39 | \$2.36 | \$2.28 |
| 2016 Ownership Cost | \$2.41 | \$2.32 | \$2.29 |
| \$ Change | \$0.02 | -\$0.05 | \$0.00 |
| % Change | 0.7% | -1.9% | 0.0% |
| 2015 Total Cost | \$7.27 | \$7.10 | \$6.97 |
| 2016 Total Cost | \$6.87 | \$6.56 | \$6.53 |
| \$ Change | -\$0.40 | -\$0.54 | \$0.44 |
| % Change | -5.5% | -7.6% | -6.4% |

Note: values are rounded and may not add up.

Table 11-B. Cost of production per acre for irrigated Russet Burbank potatoes by region for 2015 and 2016 and change in costs between these years.

| | Southwestern Russet Burbank No Fumigation Po2 | Southcentral Russet Burbank No Fumigation Po5 | Eastern - South Russet Burbank No Fumigation Po2 |
|---------------------|--|--|---|
| 2015 Operating Cost | \$1,869 | \$1,669 | \$1,554 |
| 2016 Operating Cost | \$1,663 | \$1,499 | \$1,418 |
| \$ Change | \$206 | -\$170 | -\$135 |
| % Change | -11.0% | -10.2% | -8.7% |
| 2015 Ownership Cost | \$1,069 | \$938 | \$825 |
| 2016 Ownership Cost | \$1,056 | \$929 | \$818 |
| \$ Change | \$13 | -\$8 | -\$7 |
| % Change | 1.2% | -0.9% | -0.9% |
| 2015 Total Cost | \$2,938 | \$2,607 | \$2,379 |
| 2016 Total Cost | \$2,719 | \$2,428 | \$2,236 |
| \$ Change | \$219 | -\$179 | -\$143 |
| % Change | -7.5% | -6.9% | -6.0% |

Note: values are rounded and may not add up.

Table 12-B. Cost of production per cwt for irrigated Russet Burbank potatoes by region for 2015 and 2016 and change in costs between these years.

| | Southwestern Russet Burbank No Fumigation Po2 | Southcentral Russet Burbank No Fumigation Po5 | Eastern - South Russet Burbank No Fumigation Po2 |
|---------------------|--|--|---|
| 2015 Operating Cost | \$4.40 | \$4.34 | \$4.32 |
| 2016 Operating Cost | \$3.87 | \$3.95 | \$3.94 |
| \$ Change | \$0.53 | -\$0.39 | -\$0.37 |
| % Change | -12.0% | -9.0% | -8.7% |
| 2015 Ownership Cost | \$2.52 | \$2.44 | \$2.29 |
| 2016 Ownership Cost | \$2.46 | \$2.45 | \$2.27 |
| \$ Change | \$0.06 | \$0.01 | -\$0.02 |
| % Change | -2.4% | 0.4% | -0.9% |
| 2015 Total Cost | \$6.91 | \$6.77 | \$6.61 |
| 2016 Total Cost | \$6.33 | \$6.39 | \$6.21 |
| \$ Change | \$0.59 | -\$0.38 | -\$0.39 |
| % Change | -8.5% | -5.6% | -6.0% |

Note: values are rounded and may not add up.

Appendix A

Southwestern Idaho
Irrigated Russet Burbank Potato
Fumigated

Table A-1. 2016 Costs to grow, harvest and sort Southwestern Idaho Russet Burbank potatoes with fumigation.

| Item | Quantity Per Acre | Unit | Price or Cost | Value or Cost/Acre | 2015 | Yield Change | |
|--|-------------------|-----------|---------------|--------------------|-------------------|------------------|---------------|
| Gross Returns | | | | | | | |
| Potatoes | 505.00 | cwt | 7.25 | \$3,661.25 | 515 | -10 | -1.9% |
| Total Gross Returns | | | | \$3,661.25 | | | |
| Operating Inputs | | | | | | | |
| Seed: | | | | \$363.60 | \$356.40 | \$7.20 | 2.0% |
| G-3 Russet Burbank Seed | 24.00 | cwt | 13.40 | 321.60 | 315.60 | \$6.00 | 1.9% |
| Seed Cutting | 24.00 | cwt | 1.75 | 42.00 | 40.80 | \$1.20 | 2.9% |
| Fertilizer: | | | | \$401.35 | \$545.45 | -\$144.10 | -26.4% |
| Dry Nitrogen - Preplant | 175.00 | lb | 0.41 | 71.75 | 96.25 | -\$24.50 | -25.5% |
| Dry P2O5 | 220.00 | lb | 0.37 | 81.40 | 116.60 | -\$35.20 | -30.2% |
| K2O | 255.00 | lb | 0.29 | 73.95 | 112.20 | -\$38.25 | -34.1% |
| Sulfur | 115.00 | lb | 0.23 | 26.45 | 31.05 | -\$4.60 | -14.8% |
| Liquid Nitrogen | 135.00 | lb | 0.48 | 64.80 | 98.55 | -\$33.75 | -34.2% |
| Liquid P2O5 | 65.00 | lb | 0.60 | 39.00 | 46.80 | -\$7.80 | -16.7% |
| Micronutrients & Foliars | 2.00 | acre | 22.00 | 44.00 | 44.00 | \$0.00 | 0.0% |
| Pesticides & Chemicals: | | | | \$546.38 | \$632.96 | -\$86.58 | -13.7% |
| Vapam HL 42% | 42.00 | gal | 5.20 | 218.40 | 249.90 | -\$31.50 | -12.6% |
| Seed Treatment | 24.00 | cwt | 0.60 | 14.40 | 12.00 | \$2.40 | 20.0% |
| Admire Pro | 8.00 | fl oz | 1.30 | 10.40 | 12.00 | -\$1.60 | -13.3% |
| Moncut 70DF | 0.80 | lb | 26.60 | 21.28 | 26.76 | -\$5.48 | -20.5% |
| Eptam 7E | 4.00 | pt | 5.80 | 23.20 | 25.00 | -\$1.80 | -7.2% |
| Metribuzin 75DF | 0.75 | lb | 12.50 | 9.38 | 10.99 | -\$1.61 | -14.7% |
| Prowl 3,3EC | 2.00 | pt | 3.25 | 6.50 | 9.80 | -\$3.30 | -33.7% |
| Ridomil Gold MZ | 2.50 | lb | 14.00 | 35.00 | 36.38 | -\$1.38 | -3.8% |
| Endura (2x) | 7.00 | oz | 3.50 | 24.50 | 49.35 | -\$24.85 | -50.4% |
| Revus Top (2x) | 12.00 | fl oz | 2.25 | 27.00 | 29.04 | -\$2.04 | -7.0% |
| Bravo Weather Stik (2x) | 3.00 | pt | 5.35 | 16.05 | 13.95 | \$2.10 | 15.1% |
| Manzate Pro-Stick | 2.00 | lb | 4.65 | 9.30 | 9.70 | -\$0.40 | -4.1% |
| Gavel 75DF | 2.00 | lb | 8.50 | 17.00 | 15.50 | \$1.50 | 9.7% |
| Fulfill WDG | 5.50 | oz | 5.25 | 28.88 | 34.38 | -\$5.50 | -16.0% |
| Brigadier (2x) | 12.00 | fl oz | 1.30 | 15.60 | 16.20 | -\$0.60 | -3.7% |
| Movento | 5.00 | fl oz | 6.90 | 34.50 | 37.50 | -\$3.00 | -8.0% |
| Reaper 0.15EC (1x) | 12.00 | fl oz | 0.70 | 8.40 | 16.80 | -\$8.40 | -50.0% |
| Beleaf 50SG | 2.80 | oz | 9.50 | 26.60 | 27.72 | -\$1.12 | -4.0% |
| Custom & Consultants: | | | | \$129.75 | \$158.00 | -\$28.25 | -17.9% |
| Custom Fumigate - Deep Injection | 1.00 | acre | 42.00 | 42.00 | 48.00 | -\$6.00 | -12.5% |
| Custom Fertilize: 400 - 800 lbs | 1.00 | acre | 7.75 | 7.75 | 8.75 | -\$1.00 | -11.4% |
| Custom Fertilize: 0 - 400 lbs | 1.00 | acre | 7.50 | 7.50 | 8.25 | -\$0.75 | -9.1% |
| Custom Air Spray - 5 gal | 5.00 | acre | 8.50 | 42.50 | 63.00 | -\$20.50 | -32.5% |
| Consultant & Soil/Pet. Test | 1.00 | acre | 30.00 | 30.00 | 30.00 | \$0.00 | 0.0% |
| Irrigation: | | | | \$129.76 | \$125.31 | \$4.45 | 3.6% |
| Water Assessment | 1.00 | acre | 53.50 | 53.50 | 50.60 | \$2.90 | 5.7% |
| Irrigation Repairs - Center Pivot | 31.00 | acre-inch | 0.52 | 16.12 | 58.90 | -\$42.78 | -72.6% |
| Irrigation Power - Center Pivot | 31.00 | acre-inch | 1.94 | 60.14 | 15.81 | \$44.33 | 280.4% |
| Machinery: | | | | \$143.34 | \$155.07 | -\$11.73 | -7.6% |
| Fuel - Gas | 5.32 | gal | 2.35 | 12.50 | 14.10 | -\$1.60 | -11.3% |
| Fuel - Farm Diesel | 22.37 | gal | 2.10 | 46.98 | 54.81 | -\$7.83 | -14.3% |
| Fuel - Road Diesel | 2.32 | gal | 2.55 | 5.92 | 6.84 | -\$0.93 | -13.6% |
| Lube | 1.00 | \$ | 9.78 | 9.78 | 11.36 | -\$1.58 | -13.9% |
| Machinery Repairs | 1.00 | \$ | 68.16 | 68.16 | 67.96 | \$0.20 | 0.3% |
| Labor: | | | | \$230.51 | \$222.79 | \$7.72 | 3.5% |
| Equipment Operator Labor | 4.78 | hrs | 19.15 | 91.54 | 88.43 | \$3.11 | 3.5% |
| Truck Driver Labor | 3.60 | hrs | 14.90 | 53.64 | 51.84 | \$1.80 | 3.5% |
| Irrigation Labor - Center Pivot | 1.28 | hrs | 19.15 | 24.51 | 23.68 | \$0.83 | 3.5% |
| Irrigation Labor - Chem-Fert | 1.20 | hrs | 19.15 | 22.98 | 22.20 | \$0.78 | 3.5% |
| General Farm Labor | 3.44 | hrs | 11.00 | 37.84 | 36.64 | \$1.20 | 3.3% |
| Sorting: | | | | \$73.23 | \$72.92 | \$0.30 | 0.4% |
| Sorting Labor | 505.00 | cwt | 0.111 | 56.06 | 55.41 | \$0.64 | 1.2% |
| Sorting Equipment Repairs & Power | 505.00 | cwt | 0.034 | 17.17 | 17.51 | -\$0.34 | -1.9% |
| Other: | | | | \$156.40 | \$158.02 | -\$1.62 | -1.0% |
| Crop Insurance | 1.00 | acre | 70.00 | 70.00 | 70.00 | \$0.00 | 0.0% |
| Fees & Assessments | 480.00 | cwt | 0.18 | 86.40 | 88.02 | -\$1.62 | -1.8% |
| Interest on Operating Capital at 6.00% | | | | \$76.90 | 83.81 | -\$6.91 | -8.2% |
| Total Operating Costs | | | | \$2,251.21 | \$2,510.73 | -\$259.52 | -10.3% |
| Operating Costs per Unit | | | | \$4.46 | \$4.88 | -\$0.42 | -8.6% |
| Net Returns Above Operating Costs | | | | \$1,410.04 | \$1,351.77 | | |

Table A-1 (cont). 2016 Costs to grow, harvest and sort Southwestern Idaho Russet Burbank potatoes with fumigation.

| Item | Quantity Per Acre | Unit | Price or Cost | Value or Cost/Acre | | | |
|---|-------------------|---------------|---------------|--------------------|-------------------|------------------|--------------|
| Ownership Costs: | | | | | | | |
| Tractors & Equipment Insurance | | | | 6.00 | 5.82 | \$0.18 | 3.1% |
| Tractors & Equipment Depreciation & Interest | | | | 204.00 | 201.00 | \$3.00 | 1.5% |
| Potato Handling Equipment Deprec. & Interest | | | | 77.00 | 75.00 | \$2.00 | 2.7% |
| Land* | | | | 700.00 | 700.00 | \$0.00 | 0.0% |
| Overhead | | | | 56.00 | 63.00 | -\$7.00 | -11.1% |
| Management Fee | | | | 173.00 | 187.00 | -\$14.00 | -7.5% |
| Total Ownership Costs | | | | \$1,216.00 | \$1,231.82 | -\$15.82 | -1.3% |
| Ownership Costs per Unit | | | | \$2.41 | \$2.39 | \$0.02 | 0.7% |
| Total Costs per Acre | | | | \$3,467.21 | \$3,742.55 | -\$275.34 | -7.4% |
| Total Cost per Unit | | | | \$6.87 | \$7.27 | -\$0.40 | -5.5% |
| Returns to Risk | | | | \$194.04 | \$119.95 | | |
| Notes: | | | | | | | |
| *Includes irrigation system ownership costs. | | | | | | | |
| Blue font indicates an increase. | | | | | | | |
| Red font indicates a decrease. | | | | | | | |
| A green font indicates a change in product or procedure to derive the cost. | | | | | | | |
| Procedural changes can result in different costs than were published the previous year. | | | | | | | |
| Breakeven Analysis: | | | | | | | |
| | - | Base | + | | | | |
| | 5% | | 5% | | | | |
| | | Yield | | | | | |
| <u>Price</u> | 479.75 | 505 | 530.25 | | | | |
| Operating Cost Breakeven | \$4.69 | \$4.46 | \$4.25 | | | | |
| Ownership Cost Breakeven | \$2.53 | \$2.41 | \$2.29 | | | | |
| Total Cost Breakeven | \$7.23 | \$6.87 | \$6.54 | | | | |
| | | Price | | | | | |
| <u>Yield</u> | \$6.89 | \$7.25 | \$7.61 | | | | |
| Operating Cost Breakeven | 326.9 | 310.5 | 295.7 | | | | |
| Ownership Cost Breakeven | 176.6 | 167.7 | 159.7 | | | | |
| Total Cost Breakeven | 503.4 | 478.2 | 455.5 | | | | |

Table A-2. 2016 Cost per cwt to grow, harvest, sort and store Southwestern Idaho Russet Burbank potatoes with fumigation based on both field-run and paid yield.

| | Storage Costs | Field Run Cost per Cwt | Paid Yield Cost per Cwt |
|--|------------------------------|-------------------------------------|-------------------------------------|
| Field-Run Yield | | 505.00 | |
| Paid Yield % | 95% | | 479.8 |
| Base Cost to Grow, Harvest & Sort | | \$6.87 | \$7.23 |
| Storage System Annual Ownership Costs | \$0.358 | \$0.358 | \$0.377 |
| Base Cost + Storage Ownership Costs | | \$7.22 | \$7.60 |
| Storage System Annual Repairs | \$0.041 | \$0.041 | \$0.043 |
| Base + Storage System Ownership & Repairs | | \$7.26 | \$7.65 |
| | Cumulative Storage Op. Costs | Cumulative Base + All Storage Costs | Cumulative Base + All Storage Costs |
| October | \$0.222 | \$7.49 | \$7.88 |
| November* | \$0.398 | \$7.66 | \$8.07 |
| December | \$0.485 | \$7.75 | \$8.16 |
| January | \$0.576 | \$7.84 | \$8.25 |
| February | \$0.664 | \$7.93 | \$8.35 |
| March | \$0.753 | \$8.02 | \$8.44 |
| April | \$0.945 | \$8.21 | \$8.64 |
| May | \$1.055 | \$8.32 | \$8.76 |
| June | \$1.184 | \$8.45 | \$8.89 |

Data entered directly by user. All other values are calculated.

Calculated values.

*Indicates month when sprout inhibitor applied.

Base cost of production includes cost to grow, harvest & sort potatoes, both operating and ownership. Ownership costs for potato handling equipment are included in the base cost of production.

Storage system includes: storage facility, air system, and the equipment used to place.

Storage operating costs include: repairs (shown separately), plus monthly operating costs: labor, power, chemicals, interest, shrink & insurance.

Storage costs do not include the cost of removing potatoes from storage.

Cumulative storage operating expenses are calculated to the end of the month.

Appendix B

Southcentral Idaho
Irrigated Russet Burbank Potato
Fumigated

Table B-1. 2016 Costs to grow, harvest and sort Southcentral Idaho Russet Burbank potatoes with fumigation.

| Item | Quantity Per Acre | Unit | Price or Cost | Value or Cost/Acre | 2015 | Yield Change | |
|--|-------------------|-----------|---------------|--------------------|-------------------|------------------|---------------|
| Gross Returns | | | | | | | |
| Potatoes | 475.00 | cwt | 7.00 | \$3,325.00 | 470 | 5 | 1.1% |
| Total Gross Returns | | | | \$3,325.00 | | | |
| Operating Inputs | | | | | | | |
| Seed: | | | | \$339.25 | \$330.05 | \$9.20 | 2.8% |
| G-3 Russet Burbank Seed | 23.00 | cwt | 13.00 | 299.00 | 290.95 | \$8.05 | 2.8% |
| Seed Cutting | 23.00 | cwt | 1.75 | 40.25 | 39.10 | \$1.15 | 2.9% |
| Fertilizer: | | | | \$357.80 | \$489.25 | -\$131.45 | -26.9% |
| Dry Nitrogen - Preplant | 175.00 | lb | 0.41 | 71.75 | 96.25 | -\$24.50 | -25.5% |
| Dry P2O5 | 220.00 | lb | 0.37 | 81.40 | 116.60 | -\$35.20 | -30.2% |
| K2O | 235.00 | lb | 0.29 | 68.15 | 103.40 | -\$35.25 | -34.1% |
| Sulfur | 90.00 | lb | 0.23 | 20.70 | 24.30 | -\$3.60 | -14.8% |
| Liquid Nitrogen | 110.00 | lb | 0.48 | 52.80 | 80.30 | -\$27.50 | -34.2% |
| Liquid P2O5 | 45.00 | lb | 0.60 | 27.00 | 32.40 | -\$5.40 | -16.7% |
| Micronutrients & Foliars | 2.00 | acre | 18.00 | 36.00 | 36.00 | \$0.00 | 0.0% |
| Pesticides & Chemicals: | | | | \$487.88 | \$544.30 | -\$56.42 | -10.4% |
| Metam CLR (42%) | 40.00 | gal | 5.80 | 232.00 | 226.00 | \$6.00 | 2.7% |
| Seed Treatment | 23.00 | cwt | 0.60 | 13.80 | 11.50 | \$2.30 | 20.0% |
| Admire Pro | 8.00 | oz | 1.30 | 10.40 | 12.00 | -\$1.60 | -13.3% |
| Quadris Flowable | 8.00 | fl oz | 1.65 | 13.20 | 18.40 | -\$5.20 | -28.3% |
| Outlook 6EC | 20.00 | fl oz | 1.00 | 20.00 | 20.40 | -\$0.40 | -2.0% |
| Prowl 3.3EC | 2.00 | pt | 3.25 | 6.50 | 9.80 | -\$3.30 | -33.7% |
| Metribuzin 75DF | 0.75 | lb | 12.50 | 9.38 | 10.99 | -\$1.61 | -14.7% |
| Endura | 5.50 | oz | 3.50 | 19.25 | 25.85 | -\$6.60 | -25.5% |
| Dithane F45 Rainshield (2x) | 3.75 | qt | 8.00 | 30.00 | 48.72 | -\$18.72 | -38.4% |
| Tanos | 6.00 | oz | 2.65 | 15.90 | 16.50 | -\$0.60 | -3.6% |
| Gavel 75DF | 2.00 | lb | 8.50 | 17.00 | 15.50 | \$1.50 | 9.7% |
| Revus Top | 7.00 | fl oz | 2.25 | 15.75 | 16.94 | -\$1.19 | -7.0% |
| Brigadier (2x) | 12.00 | fl oz | 1.30 | 15.60 | 24.30 | -\$8.70 | -35.8% |
| Movento | 5.00 | fl oz | 6.90 | 34.50 | 37.50 | -\$3.00 | -8.0% |
| Agri-Mek .75SC (2x) | 7.00 | fl oz | 2.50 | 17.50 | 27.30 | -\$9.80 | -35.9% |
| Reglone | 1.00 | qt | 17.10 | 17.10 | 22.60 | -\$5.50 | -24.3% |
| Custom & Consultants: | | | | \$125.25 | \$157.25 | -\$32.00 | -20.3% |
| Custom Fumigate - Deep Injection | 1.00 | acre | 42.00 | 42.00 | 44.00 | -\$2.00 | -4.5% |
| Custom Fertilize: 400 - 800 lbs | 1.00 | acre | 7.75 | 7.75 | 7.75 | \$0.00 | 0.0% |
| Custom Fertilize: 0 - 400 lbs | 1.00 | acre | 7.50 | 7.50 | 7.25 | \$0.25 | 3.4% |
| Custom Air Spray - 7.5 gal | 4.00 | acre | 9.50 | 38.00 | 68.25 | -\$30.25 | -44.3% |
| Consultant & Soil/Pet. Test | 1.00 | acre | 30.00 | 30.00 | 30.00 | \$0.00 | 0.0% |
| Irrigation: | | | | \$118.84 | \$115.49 | \$3.35 | 2.9% |
| Water Assessment | 1.00 | acre | 47.50 | 47.50 | 45.60 | \$1.90 | 4.2% |
| Irrigation Repairs - Center Pivot | 29.00 | acre-inch | 0.52 | 15.08 | 55.10 | -\$40.02 | -72.6% |
| Irrigation Power - Center Pivot | 29.00 | acre-inch | 1.94 | 56.26 | 14.79 | \$41.47 | 280.4% |
| Machinery: | | | | \$114.85 | \$125.09 | -\$10.23 | -8.2% |
| Fuel - Gas | 4.59 | gal | 2.20 | 10.10 | 11.48 | -\$1.38 | -12.0% |
| Fuel - Farm Diesel | 19.41 | gal | 1.95 | 37.85 | 44.64 | -\$6.79 | -15.2% |
| Fuel - Road Diesel | 2.28 | gal | 2.45 | 5.59 | 6.50 | -\$0.91 | -14.0% |
| Lube | 1.00 | \$ | 8.08 | 8.08 | 9.39 | -\$1.31 | -14.0% |
| Machinery Repairs | 1.00 | \$ | 53.24 | 53.24 | 53.08 | \$0.16 | 0.3% |
| Labor: | | | | \$182.58 | \$176.45 | \$6.13 | 3.5% |
| Equipment Operator Labor | 4.52 | hrs | 19.15 | 86.56 | 83.62 | \$2.94 | 3.5% |
| Truck Driver Labor | 2.00 | hrs | 14.90 | 29.80 | 28.80 | \$1.00 | 3.5% |
| Irrigation Labor - Center Pivot | 1.16 | hrs | 19.15 | 22.21 | 21.46 | \$0.75 | 3.5% |
| Irrigation Labor - Chem-Fert | 1.00 | hrs | 19.15 | 19.15 | 18.50 | \$0.65 | 3.5% |
| General Farm Labor | 2.26 | hrs | 11.00 | 24.86 | 24.07 | \$0.79 | 3.3% |
| Sorting: | | | | \$68.88 | \$66.55 | \$2.32 | 3.5% |
| Sorting Labor | 475.00 | cwt | 0.111 | 52.73 | 50.57 | \$2.15 | 4.3% |
| Sorting Equipment Repairs & Power | 475.00 | cwt | 0.034 | 16.15 | 15.98 | \$0.17 | 1.1% |
| Other: | | | | \$151.18 | \$150.28 | \$0.90 | 0.6% |
| Crop Insurance | 1.00 | acre | 70.00 | 70.00 | 70.00 | \$0.00 | 0.0% |
| Fees & Assessments | 451.00 | cwt | 0.18 | 81.18 | 80.28 | \$0.90 | 1.1% |
| Interest on Operating Capital at 6.00% | | | | \$70.30 | 73.24 | -\$2.94 | -4.0% |
| Total Operating Costs | | | | \$2,016.81 | \$2,227.94 | -\$211.14 | -9.5% |
| Operating Costs per Unit | | | | \$4.25 | \$4.74 | -\$0.49 | -10.4% |
| Net Returns Above Operating Costs | | | | \$1,308.19 | \$1,179.56 | | |

Table B-1 (cont). 2016 Costs to grow, harvest and sort Southcentral Idaho Russet Burbank potatoes with fumigation.

| Item | Quantity Per Acre | Unit | Price or Cost | Value or Cost/Acre | | | |
|---|-------------------|---------------|---------------|--------------------|-------------------|------------------|--------------|
| Ownership Costs: | | | | | | | |
| Tractors & Equipment Insurance | | | | 5.73 | 5.56 | \$0.17 | 3.1% |
| Tractors & Equipment Depreciation & Interest | | | | 190.00 | 188.00 | \$2.00 | 1.1% |
| Potato Handling Equipment Deprec. & Interest | | | | 70.50 | 69.00 | \$1.50 | 2.2% |
| Land* | | | | 625.00 | 625.00 | \$0.00 | 0.0% |
| Overhead | | | | 51.50 | 56.00 | -\$4.50 | -8.0% |
| Management Fee | | | | 158.00 | 167.00 | -\$9.00 | -5.4% |
| Total Ownership Costs | | | | \$1,100.73 | \$1,110.56 | -\$9.83 | -0.9% |
| Ownership Costs per Unit | | | | \$2.32 | \$2.36 | -\$0.05 | -1.9% |
| Total Costs per Acre | | | | \$3,117.54 | \$3,338.50 | -\$220.97 | -6.6% |
| Total Cost per Unit | | | | \$6.56 | \$7.10 | -\$0.54 | -7.6% |
| Returns to Risk | | | | \$207.46 | \$69.00 | | |
| Notes: | | | | | | | |
| *Includes irrigation system ownership costs. | | | | | | | |
| Blue font indicates an increase. | | | | | | | |
| Red font indicates a decrease. | | | | | | | |
| A green font indicates a change in product or procedure to derive the cost. | | | | | | | |
| Procedural changes can result in different costs than were published the previous year. | | | | | | | |
| Breakeven Analysis: | | | | | | | |
| | - | Base | + | | | | |
| | 5% | | 5% | | | | |
| | | Yield | | | | | |
| <u>Price</u> | 451.25 | 475 | 498.75 | | | | |
| Operating Cost Breakeven | \$4.47 | \$4.25 | \$4.04 | | | | |
| Ownership Cost Breakeven | \$2.44 | \$2.32 | \$2.21 | | | | |
| Total Cost Breakeven | \$6.91 | \$6.56 | \$6.25 | | | | |
| | | Price | | | | | |
| <u>Yield</u> | \$6.65 | \$7.00 | \$7.35 | | | | |
| Operating Cost Breakeven | 303.3 | 288.1 | 274.4 | | | | |
| Ownership Cost Breakeven | 165.5 | 157.2 | 149.8 | | | | |
| Total Cost Breakeven | 468.8 | 445.4 | 424.2 | | | | |

Table B-2. 2016 Cost per cwt to grow, harvest, sort and store Southcentral Idaho Russet Burbank potatoes with fumigation based on both field-run and paid yield.

| | Storage Costs | Field Run Cost per Cwt | Paid Yield Cost per Cwt |
|--|-------------------------------------|--|--|
| Field-Run Yield | | 475.00 | |
| Paid Yield % | 95% | | 451.3 |
| Base Cost to Grow, Harvest & Sort | | \$6.56 | \$6.91 |
| Storage System Annual Ownership Costs | \$0.358 | \$0.358 | \$0.377 |
| Base Cost + Storage Ownership Costs | | \$6.92 | \$7.29 |
| Storage System Annual Repairs | \$0.041 | \$0.041 | \$0.043 |
| Base + Storage System Ownership & Repairs | | \$6.96 | \$7.33 |
| | Cumulative Storage Op. Costs | Cumulative Base + All Storage Costs | Cumulative Base + All Storage Costs |
| October | \$0.210 | \$7.17 | \$7.55 |
| November* | \$0.380 | \$7.34 | \$7.73 |
| December | \$0.466 | \$7.43 | \$7.82 |
| January | \$0.550 | \$7.51 | \$7.91 |
| February | \$0.636 | \$7.60 | \$8.00 |
| March | \$0.721 | \$7.68 | \$8.09 |
| April | \$0.908 | \$7.87 | \$8.28 |
| May | \$1.013 | \$7.98 | \$8.39 |
| June | \$1.135 | \$8.10 | \$8.52 |

Data entered directly by user. All other values are calculated.

Calculated values.

*Indicates month when sprout inhibitor applied.

Base cost of production includes cost to grow, harvest & sort potatoes, both operating and ownership.

Ownership costs for potato handling equipment are included in the base cost of production.

Storage system includes: storage facility, air system, and the equipment used to place.

Storage operating costs include: repairs (shown separately), plus monthly operating costs: labor, power, chemicals, interest, shrink & insurance.

Storage costs do not include the cost of removing potatoes from storage.

Cumulative storage operating expenses are calculated to the end of the month.

Appendix C

Eastern Idaho Southern Region
Irrigated Russet Burbank Potato
Fumigated

Table C-1. 2016 Costs to grow, harvest and sort Eastern Idaho Southern region Russet Burbank potatoes with fumigation.

| Item | Quantity Per Acre | Unit | Price or Cost | Value or Cost/Acre | 2015 | Yield Change | |
|--|-------------------|-----------|---------------|--------------------|-------------------|------------------|---------------|
| Gross Returns | | | | | | | |
| Potatoes | 420.00 | cwt | 7.00 | \$2,940.00 | 425 | -5 | -1.2% |
| Total Gross Returns | | | | \$2,940.00 | | | |
| Operating Inputs | | | | | | | |
| Seed: | | | | \$299.25 | \$289.80 | \$9.45 | 3.3% |
| G-3 Russet Burbank Seed | 21.00 | cwt | 12.50 | 262.50 | 254.10 | \$8.40 | 3.3% |
| Seed Cutting | 21.00 | cwt | 1.75 | 36.75 | 35.70 | \$1.05 | 2.9% |
| Fertilizer: | | | | \$327.35 | \$448.20 | -\$120.85 | -27.0% |
| Dry Nitrogen - Preplant | 140.00 | lb | 0.41 | 57.40 | 77.00 | -\$19.60 | -25.5% |
| Dry P2O5 | 185.00 | lb | 0.37 | 68.45 | 98.05 | -\$29.60 | -30.2% |
| K2O | 215.00 | lb | 0.29 | 62.35 | 94.60 | -\$32.25 | -34.1% |
| Sulfur | 85.00 | lb | 0.23 | 19.55 | 22.95 | -\$3.40 | -14.8% |
| Liquid Nitrogen | 120.00 | lb | 0.48 | 57.60 | 87.60 | -\$30.00 | -34.2% |
| Liquid P2O5 | 50.00 | lb | 0.60 | 30.00 | 36.00 | -\$6.00 | -16.7% |
| Micronutrients/Humic Acid - CP | 1.00 | acre | 32.00 | 32.00 | 32.00 | \$0.00 | 0.0% |
| Pesticides & Chemicals: | | | | \$393.30 | \$475.55 | -\$82.25 | -17.3% |
| Vapam 42% | 35.00 | gal | 5.20 | 182.00 | 208.25 | -\$26.25 | -12.6% |
| Seed Treatment | 21.00 | cwt | 0.60 | 12.60 | 10.50 | \$2.10 | 20.0% |
| Admire Pro | 8.00 | fl oz | 1.30 | 10.40 | 12.00 | -\$1.60 | -13.3% |
| Moncut 700DF | 1.00 | lb | 26.60 | 26.60 | 33.45 | -\$6.85 | -20.5% |
| Metribuzin 75DF | 0.67 | lb | 12.50 | 8.38 | 9.82 | -\$1.44 | -14.7% |
| Eptam 7E | 3.50 | pt | 5.80 | 20.30 | 21.88 | -\$1.58 | -7.2% |
| Prowl 3.3EC | 2.00 | pt | 3.25 | 6.50 | 9.80 | -\$3.30 | -33.7% |
| Quadris Flowable | 8.00 | fl oz | 1.65 | 13.20 | 18.40 | -\$5.20 | -28.3% |
| Omega 500DF | 5.50 | fl oz | 3.10 | 17.05 | 18.70 | -\$1.65 | -8.8% |
| Endura | 5.50 | oz | 3.50 | 19.25 | 25.85 | -\$6.60 | -25.5% |
| Bravo Weatherstik | 1.00 | pt | 5.40 | 5.40 | 9.30 | -\$3.90 | -41.9% |
| Dithane F45 Rainshield (2x) | 3.20 | qt | 8.00 | 25.60 | 27.68 | -\$2.08 | -7.5% |
| Ranman | 2.75 | fl oz | 4.50 | 12.38 | 12.93 | -\$0.55 | -4.3% |
| Agri-Mek .75SC | 3.50 | fl oz | 2.50 | 8.75 | 18.20 | -\$9.45 | -51.9% |
| Brigadier | 6.00 | fl oz | 1.30 | 7.80 | 16.20 | -\$8.40 | -51.9% |
| Reglone | 2.00 | pt | 8.55 | 17.10 | 22.60 | -\$5.50 | -24.3% |
| Custom & Consultants: | | | | \$108.75 | \$120.00 | -\$11.25 | -9.4% |
| Custom Fumigate - Deep Injection | 1.00 | acre | 42.00 | 42.00 | 44.00 | -\$2.00 | -4.5% |
| Custom Fertilize: 400 - 800 lbs | 1.00 | acre | 7.75 | 7.75 | 7.75 | \$0.00 | 0.0% |
| Custom Fertilize: 0 - 400 lbs | 1.00 | acre | 7.50 | 7.50 | 7.25 | \$0.25 | 3.4% |
| Custom Air Spray - 5.0 gal | 3.00 | acre | 8.50 | 25.50 | 35.00 | -\$9.50 | -27.1% |
| Consultant & Soil/Pet. Test | 1.00 | acre | 26.00 | 26.00 | 26.00 | \$0.00 | 0.0% |
| Irrigation: | | | | \$99.73 | \$96.46 | \$3.27 | 3.4% |
| Water Assessment | 1.00 | acre | 37.00 | 37.00 | 35.00 | \$2.00 | 5.7% |
| Irrigation Repairs - Center Pivot | 25.50 | acre-inch | 0.52 | 13.26 | 13.01 | \$0.25 | 2.0% |
| Irrigation Power - Center Pivot | 25.50 | acre-inch | 1.94 | 49.47 | 48.45 | \$1.02 | 2.1% |
| Machinery: | | | | \$116.86 | \$127.40 | -\$10.54 | -8.3% |
| Fuel - Gas | 4.52 | gal | 2.20 | 9.94 | 11.30 | -\$1.36 | -12.0% |
| Fuel - Farm Diesel | 20.47 | gal | 2.00 | 40.94 | 48.10 | -\$7.16 | -14.9% |
| Fuel - Road Diesel | 2.02 | gal | 2.45 | 4.95 | 5.76 | -\$0.81 | -14.0% |
| Lube | 1.00 | \$ | 8.40 | 8.40 | 9.77 | -\$1.37 | -14.0% |
| Machinery Repairs | 1.00 | \$ | 52.63 | 52.63 | 52.47 | \$0.16 | 0.3% |
| Labor: | | | | \$163.46 | \$157.98 | \$5.48 | 3.5% |
| Equipment Operator Labor | 3.88 | hrs | 19.15 | 74.30 | 71.78 | \$2.52 | 3.5% |
| Truck Driver Labor | 1.98 | hrs | 14.90 | 29.50 | 28.51 | \$0.99 | 3.5% |
| Irrigation Labor - Center Pivot | 1.02 | hrs | 19.15 | 19.53 | 18.87 | \$0.66 | 3.5% |
| Irrigation Labor - Chem-Fert | 0.82 | hrs | 19.15 | 15.70 | 15.17 | \$0.53 | 3.5% |
| General Farm Labor | 2.22 | hrs | 11.00 | 24.42 | 23.64 | \$0.78 | 3.3% |
| Sorting: | | | | \$60.90 | \$60.18 | \$0.72 | 1.2% |
| Sorting Labor | 420.00 | cwt | 0.111 | 46.62 | 45.73 | \$0.89 | 1.9% |
| Sorting Equipment Repairs & Power | 420.00 | cwt | 0.034 | 14.28 | 14.45 | -\$0.17 | -1.2% |
| Other: | | | | \$152.00 | \$152.72 | -\$0.72 | -0.5% |
| Crop Insurance: MP + Hail | 1.00 | acre | 80.00 | 80.00 | 80.00 | \$0.00 | 0.0% |
| Fees & Assessments | 400.00 | cwt | 0.18 | 72.00 | 72.72 | -\$0.72 | -1.0% |
| Interest on Operating Capital at 6.00% | | | | \$61.40 | 64.97 | -\$3.57 | -5.5% |
| Total Operating Costs | | | | \$1,783.00 | \$1,993.25 | -\$210.24 | -10.5% |
| Operating Costs per Unit | | | | \$4.25 | \$4.69 | -\$0.44 | -9.5% |
| Net Returns Above Operating Costs | | | | \$1,157.00 | \$1,088.00 | | |

Table C-1 (cont). 2016 Costs to grow, harvest and sort Eastern Idaho Southern region Russet Burbank potatoes with fumigation.

| Item | Quantity Per Acre | Unit | Price or Cost | Value or Cost/Acre | | | |
|---|-------------------|---------------|---------------|--------------------|-------------------|------------------|--------------|
| Ownership Costs: | | | | | | | |
| Tractors & Equipment Insurance | | | | 5.27 | 5.12 | \$0.15 | 2.9% |
| Tractors & Equipment Depreciation & Interest | | | | 174.00 | 172.00 | \$2.00 | 1.2% |
| Potato Handling Equipment Deprec. & Interest | | | | 62.50 | 61.00 | \$1.50 | 2.5% |
| Land* | | | | 535.00 | 535.00 | \$0.00 | 0.0% |
| Overhead | | | | 45.00 | 50.00 | -\$5.00 | -10.0% |
| Management Fee | | | | 138.00 | 148.00 | -\$10.00 | -6.8% |
| Total Ownership Costs | | | | \$959.77 | \$971.12 | -\$11.35 | -1.2% |
| Ownership Costs per Unit | | | | \$2.29 | \$2.28 | \$0.00 | 0.0% |
| Total Costs per Acre | | | | \$2,742.77 | \$2,964.37 | -\$221.59 | -7.5% |
| Total Cost per Unit | | | | \$6.53 | \$6.97 | -\$0.44 | -6.4% |
| Returns to Risk | | | | \$197.23 | \$116.88 | | |
| Notes: | | | | | | | |
| *Includes irrigation system ownership costs. | | | | | | | |
| Blue font indicates an increase. | | | | | | | |
| Red font indicates a decrease. | | | | | | | |
| A green font indicates a change in product or procedure to derive the cost. | | | | | | | |
| Procedural changes can result in different costs than were published the previous year. | | | | | | | |
| Breakeven Analysis: | | | | | | | |
| | - | Base | + | | | | |
| | 5% | | 5% | | | | |
| | | Yield | | | | | |
| <u>Price</u> | 399 | 420 | 441 | | | | |
| Operating Cost Breakeven | \$4.47 | \$4.25 | \$4.04 | | | | |
| Ownership Cost Breakeven | \$2.41 | \$2.29 | \$2.18 | | | | |
| Total Cost Breakeven | \$6.87 | \$6.53 | \$6.22 | | | | |
| | | Price | | | | | |
| <u>Yield</u> | \$6.65 | \$7.00 | \$7.35 | | | | |
| Operating Cost Breakeven | 268.1 | 254.7 | 242.6 | | | | |
| Ownership Cost Breakeven | 144.3 | 137.1 | 130.6 | | | | |
| Total Cost Breakeven | 412.4 | 391.8 | 373.2 | | | | |

Table C-2. 2016 Cost per cwt to grow, harvest, sort and store Eastern Idaho Southern region Russet Burbank potatoes with fumigation based on both field-run and paid yield.

| | Storage Costs | Field Run Cost per Cwt | Paid Yield Cost per Cwt |
|--|-------------------------------------|--|--|
| Field-Run Yield | | 420.00 | |
| Paid Yield % | 95% | | 399.0 |
| Base Cost to Grow, Harvest & Sort | | \$6.53 | \$6.87 |
| Storage System Annual Ownership Costs | \$0.358 | \$0.358 | \$0.377 |
| Base Cost + Storage Ownership Costs | | \$6.89 | \$7.25 |
| Storage System Annual Repairs | \$0.041 | \$0.041 | \$0.043 |
| Base + Storage System Ownership & Repairs | | \$6.93 | \$7.29 |
| | Cumulative Storage Op. Costs | Cumulative Base + All Storage Costs | Cumulative Base + All Storage Costs |
| October | \$0.222 | \$7.15 | \$7.53 |
| November* | \$0.398 | \$7.33 | \$7.71 |
| December | \$0.485 | \$7.41 | \$7.80 |
| January | \$0.576 | \$7.51 | \$7.90 |
| February | \$0.664 | \$7.59 | \$7.99 |
| March | \$0.753 | \$7.68 | \$8.09 |
| April | \$0.945 | \$7.87 | \$8.29 |
| May | \$1.055 | \$7.98 | \$8.40 |
| June | \$1.184 | \$8.11 | \$8.54 |

Data entered directly by user. All other values are calculated.

Calculated values.

* Indicates month when sprout inhibitor applied.

Base cost of production includes cost to grow, harvest & sort potatoes, both operating and ownership.

Ownership costs for potato handling equipment are included in the base cost of production.

Storage system includes: storage facility, air system, and the equipment used to place.

Storage operating costs include: repairs (shown separately), plus monthly operating costs: labor, power, chemicals, interest, shrink & insurance.

Storage costs do not include the cost of removing potatoes from storage.

Cumulative storage operating expenses are calculated to the end of the month.

Appendix D

Southcentral Idaho
Irrigated Russet Burbank Potato
Non-Fumigated

Table D-1. 2016 Costs to grow, harvest and sort Southcentral Idaho Russet Burbank potatoes.

| Item | Quantity Per Acre | Unit | Price or Cost | Value or Cost/Acre | 2015 | Yield Change | |
|--|-------------------|-----------|---------------|--------------------|-------------------|------------------|---------------|
| Gross Returns | | | | | | | |
| Potatoes | 430.00 | cwt | 7.00 | \$3,010.00 | 425 | 5 | 1.2% |
| Total Gross Returns | | | | \$3,010.00 | | | |
| Operating Inputs | | | | | | | |
| Seed: | | | | \$339.25 | \$330.05 | \$9.20 | 2.8% |
| G-3 Russet Burbank Seed | 23.00 | cwt | 13.00 | 299.00 | 290.95 | \$8.05 | 2.8% |
| Seed Cutting | 23.00 | cwt | 1.75 | 40.25 | 39.10 | \$1.15 | 2.9% |
| Fertilizer: | | | | \$328.70 | \$449.30 | -\$120.60 | -26.8% |
| Dry Nitrogen - Preplant | 155.00 | lb | 0.41 | 63.55 | 85.25 | -\$21.70 | -25.5% |
| Dry P2O5 | 205.00 | lb | 0.37 | 75.85 | 108.65 | -\$32.80 | -30.2% |
| K2O | 215.00 | lb | 0.29 | 62.35 | 94.60 | -\$32.25 | -34.1% |
| Sulfur | 85.00 | lb | 0.23 | 19.55 | 22.95 | -\$3.40 | -14.8% |
| Liquid Nitrogen | 105.00 | lb | 0.48 | 50.40 | 76.65 | -\$26.25 | -34.2% |
| Liquid P2O5 | 35.00 | lb | 0.60 | 21.00 | 25.20 | -\$4.20 | -16.7% |
| Micronutrients & Foliars | 2.00 | acre | 18.00 | 36.00 | 36.00 | \$0.00 | 0.0% |
| Pesticides & Chemicals: | | | | \$257.13 | \$318.30 | -\$61.17 | -19.2% |
| Seed Treatment | 23.00 | cwt | 0.60 | 13.80 | 11.50 | \$2.30 | 20.0% |
| Admire Pro | 8.00 | oz | 1.30 | 10.40 | 12.00 | -\$1.60 | -13.3% |
| Quadris Flowable | 8.00 | fl oz | 1.65 | 13.20 | 18.40 | -\$5.20 | -28.3% |
| Outlook 6EC | 20.00 | fl oz | 1.00 | 20.00 | 20.40 | -\$0.40 | -2.0% |
| Prowl 3.3EC | 2.00 | pt | 3.25 | 6.50 | 9.80 | -\$3.30 | -33.7% |
| Metribuzin 75DF | 0.75 | lb | 12.50 | 9.38 | 10.99 | -\$1.61 | -14.7% |
| Endura | 5.50 | oz | 3.50 | 19.25 | 25.85 | -\$6.60 | -25.5% |
| Dithane F45 Rainshield (2x) | 3.75 | qt | 8.00 | 30.00 | 48.72 | -\$18.72 | -38.4% |
| Tanos | 6.00 | oz | 2.65 | 15.90 | 16.50 | -\$0.60 | -3.6% |
| Gavel 75DF | 2.00 | lb | 8.50 | 17.00 | 15.50 | \$1.50 | 9.7% |
| Revus Top | 7.00 | fl oz | 2.25 | 15.75 | 16.94 | -\$1.19 | -7.0% |
| Brigadier (2x) | 12.00 | fl oz | 1.30 | 15.60 | 24.30 | -\$8.70 | -35.8% |
| Movento | 5.00 | fl oz | 6.90 | 34.50 | 37.50 | -\$3.00 | -8.0% |
| Agri-Mek .75SC (2x) | 7.50 | fl oz | 2.50 | 18.75 | 27.30 | -\$8.55 | -31.3% |
| Reglone | 1.00 | qt | 17.10 | 17.10 | 22.60 | -\$5.50 | -24.3% |
| Custom & Consultants: | | | | \$83.25 | \$113.25 | -\$30.00 | -26.5% |
| Custom Fertilize: 400 - 800 lbs | 1.00 | acre | 7.75 | 7.75 | 7.75 | \$0.00 | 0.0% |
| Custom Fertilize: 0 - 400 lbs | 1.00 | acre | 7.50 | 7.50 | 7.25 | \$0.25 | 3.4% |
| Custom Air Spray - 7.5 gal | 4.00 | acre | 9.50 | 38.00 | 68.25 | -\$30.25 | -44.3% |
| Consultant & Soil/Pet. Test | 1.00 | acre | 30.00 | 30.00 | 30.00 | \$0.00 | 0.0% |
| Irrigation: | | | | \$113.92 | \$110.67 | \$3.25 | 2.9% |
| Water Assessment | 1.00 | acre | 47.50 | 47.50 | 45.60 | \$1.90 | 4.2% |
| Irrigation Repairs - Center Pivot | 27.00 | acre-inch | 0.52 | 14.04 | 51.30 | -\$37.26 | -72.6% |
| Irrigation Power - Center Pivot | 27.00 | acre-inch | 1.94 | 52.38 | 13.77 | \$38.61 | 280.4% |
| Machinery: | | | | \$114.26 | \$124.49 | -\$10.22 | -8.2% |
| Fuel - Gas | 4.59 | gal | 2.20 | 10.10 | 11.48 | -\$1.38 | -12.0% |
| Fuel - Farm Diesel | 19.41 | gal | 1.95 | 37.85 | 44.64 | -\$6.79 | -15.2% |
| Fuel - Road Diesel | 2.28 | gal | 2.45 | 5.59 | 6.50 | -\$0.91 | -14.0% |
| Lube | 1.00 | \$ | 8.03 | 8.03 | 9.33 | -\$1.30 | -13.9% |
| Machinery Repairs | 1.00 | \$ | 52.70 | 52.70 | 52.54 | \$0.16 | 0.3% |
| Labor: | | | | \$176.41 | \$170.49 | \$5.92 | 3.5% |
| Equipment Operator Labor | 4.49 | hrs | 19.15 | 85.98 | 83.07 | \$2.92 | 3.5% |
| Truck Driver Labor | 1.83 | hrs | 14.90 | 27.27 | 26.35 | \$0.92 | 3.5% |
| Irrigation Labor - Center Pivot | 1.08 | hrs | 19.15 | 20.68 | 19.98 | \$0.70 | 3.5% |
| Irrigation Labor - Chem-Fert | 0.92 | hrs | 19.15 | 17.62 | 17.02 | \$0.60 | 3.5% |
| General Farm Labor | 2.26 | hrs | 11.00 | 24.86 | 24.07 | \$0.79 | 3.3% |
| Sorting: | | | | \$62.35 | \$60.18 | \$2.17 | 3.6% |
| Sorting Labor | 430.00 | cwt | 0.111 | 47.73 | 45.73 | \$2.00 | 4.4% |
| Sorting Equipment Repairs & Power | 430.00 | cwt | 0.034 | 14.62 | 14.45 | \$0.17 | 1.2% |
| Other: | | | | \$138.62 | \$137.72 | \$0.90 | 0.7% |
| Crop Insurance | 1.00 | acre | 65.00 | 65.00 | 65.00 | \$0.00 | 0.0% |
| Fees & Assessments | 409.00 | cwt | 0.18 | 73.62 | 72.72 | \$0.90 | 1.2% |
| Interest on Operating Capital at 6.00% | | | | \$49.85 | 54.31 | -\$4.46 | -8.2% |
| Total Operating Costs | | | | \$1,663.74 | \$1,868.75 | -\$205.01 | -11.0% |
| Operating Costs per Unit | | | | \$3.87 | \$4.40 | -\$0.53 | -12.0% |
| Net Returns Above Operating Costs | | | | \$1,346.26 | \$1,212.50 | | |

Table D-1 (cont). 2016 Costs to grow, harvest and sort Southcentral Idaho Russet Burbank potatoes.

| Item | Quantity Per Acre | Unit | Price or Cost | Value or Cost/Acre | | | |
|---|----------------------|---------------|------------------|-----------------------|-------------------|------------------|--------------|
| Ownership Costs: | | | | | | | |
| Tractors & Equipment Insurance | | | | 5.63 | 5.46 | \$0.17 | 3.1% |
| Tractors & Equipment Depreciation & Interest | | | | 188.00 | 185.00 | \$3.00 | 1.6% |
| Potato Handling Equipment Deprec. & Interest | | | | 62.50 | 61.00 | \$1.50 | 2.5% |
| Land* | | | | 625.00 | 625.00 | \$0.00 | 0.0% |
| Overhead | | | | 41.00 | 47.00 | -\$6.00 | -12.8% |
| Management Fee | | | | 134.00 | 146.00 | -\$12.00 | -8.2% |
| Total Ownership Costs | | | | \$1,056.13 | \$1,069.46 | -\$13.33 | -1.2% |
| Ownership Costs per Unit | | | | \$2.46 | \$2.52 | -\$0.06 | -2.4% |
| Total Costs per Acre | | | | \$2,719.87 | \$2,938.21 | -\$218.34 | -7.4% |
| Total Cost per Unit | | | | \$6.33 | \$6.91 | -\$0.59 | -8.5% |
| Returns to Risk | | | | \$290.13 | \$143.04 | | |
| Notes: | | | | | | | |
| *Includes irrigation system ownership costs. | | | | | | | |
| Blue font indicates an increase. | | | | | | | |
| Red font indicates a decrease. | | | | | | | |
| A green font indicates a change in product or procedure to derive the cost. | | | | | | | |
| Procedural changes can result in different costs than were published the previous year. | | | | | | | |
| Breakeven Analysis: | | | | | | | |
| | - | Base | + | | | | |
| | 5% | | 5% | | | | |
| | | Yield | | | | | |
| <u>Price</u> | 408.5 | 430 | 451.5 | | | | |
| Operating Cost Breakeven | \$4.07 | \$3.87 | \$3.68 | | | | |
| Ownership Cost Breakeven | \$2.59 | \$2.46 | \$2.34 | | | | |
| Total Cost Breakeven | \$6.66 | \$6.33 | \$6.02 | | | | |
| | | Price | | | | | |
| <u>Yield</u> | \$6.65 | \$7.00 | \$7.35 | | | | |
| Operating Cost Breakeven | 250.2 | 237.7 | 226.4 | | | | |
| Ownership Cost Breakeven | 158.8 | 150.9 | 143.7 | | | | |
| Total Cost Breakeven | 409.0 | 388.6 | 370.1 | | | | |

Table D-2. 2016 Cost per cwt to grow, harvest, sort and store Southcentral Idaho Russet Burbank potatoes based on both field-run and paid yield.

| | Storage Costs | Field Run Cost per Cwt | Paid Yield Cost per Cwt |
|--|-------------------------------------|--|--|
| Field-Run Yield | | 430.00 | |
| Paid Yield % | 95% | | 408.5 |
| Base Cost to Grow, Harvest & Sort | | \$6.33 | \$6.66 |
| Storage System Annual Ownership Costs | \$0.358 | \$0.358 | \$0.377 |
| Base Cost + Storage Ownership Costs | | \$6.68 | \$7.04 |
| Storage System Annual Repairs | \$0.041 | \$0.041 | \$0.043 |
| Base + Storage System Ownership & Repairs | | \$6.72 | \$7.08 |
| | Cumulative Storage Op. Costs | Cumulative Base + All Storage Costs | Cumulative Base + All Storage Costs |
| October | \$0.210 | \$6.93 | \$7.30 |
| November* | \$0.380 | \$7.10 | \$7.48 |
| December | \$0.466 | \$7.19 | \$7.57 |
| January | \$0.550 | \$7.27 | \$7.66 |
| February | \$0.636 | \$7.36 | \$7.75 |
| March | \$0.721 | \$7.45 | \$7.84 |
| April | \$0.908 | \$7.63 | \$8.03 |
| May | \$1.013 | \$7.74 | \$8.14 |
| June | \$1.135 | \$7.86 | \$8.27 |

Data entered directly by user. All other values are calculated.

Calculated values.

* Indicates month when sprout inhibitor applied.

Base cost of production includes cost to grow, harvest & sort potatoes, both operating and ownership. Ownership costs for potato handling equipment are included in the base cost of production.

Storage system includes: storage facility, air system, and the equipment used to place.

Storage operating costs include: repairs (shown separately), plus monthly operating costs: labor, power, chemicals, interest, shrink & insurance.

Storage costs do not include the cost of removing potatoes from storage.

Cumulative storage operating expenses are calculated to the end of the month.

Appendix E

Southcentral Idaho
Irrigated Russet Burbank Potato
Non-Fumigated

Table E-1. 2016 Costs to grow, harvest and sort Eastern Idaho Southern region Russet Burbank potatoes.

| Item | Quantity Per Acre | Unit | Price or Cost | Value or Cost/Acre | 2015 | Yield Change | |
|--|-------------------|-----------|---------------|--------------------|-------------------|------------------|---------------|
| Gross Returns | | | | | | | |
| Potatoes | 380.00 | cwt | 7.00 | \$2,660.00 | 385 | -5 | -1.3% |
| Total Gross Returns | | | | \$2,660.00 | | | |
| Operating Inputs | | | | | | | |
| Seed: | | | | \$299.25 | \$289.80 | \$9.45 | 3.3% |
| G-3 Russet Burbank Seed | 21.00 | cwt | 12.50 | 262.50 | 254.10 | \$8.40 | 3.3% |
| Seed Cutting | 21.00 | cwt | 1.75 | 36.75 | 35.70 | \$1.05 | 2.9% |
| Fertilizer: | | | | \$304.65 | \$414.00 | -\$109.35 | -26.4% |
| Dry Nitrogen - Preplant | 135.00 | lb | 0.41 | 55.35 | 74.25 | -\$18.90 | -25.5% |
| Dry P2O5 | 160.00 | lb | 0.37 | 59.20 | 84.80 | -\$25.60 | -30.2% |
| K2O | 195.00 | lb | 0.29 | 56.55 | 85.80 | -\$29.25 | -34.1% |
| Sulfur | 85.00 | lb | 0.23 | 19.55 | 22.95 | -\$3.40 | -14.8% |
| Liquid Nitrogen | 100.00 | lb | 0.48 | 48.00 | 73.00 | -\$25.00 | -34.2% |
| Liquid P2O5 | 60.00 | lb | 0.60 | 36.00 | 43.20 | -\$7.20 | -16.7% |
| Micronutrients/Humic Acid - CP | 1.00 | acre | 30.00 | 30.00 | 30.00 | \$0.00 | 0.0% |
| Pesticides & Chemicals: | | | | \$211.25 | \$267.30 | -\$56.05 | -21.0% |
| Seed Treatment | 21.00 | cwt | 0.60 | 12.60 | 10.50 | \$2.10 | 20.0% |
| Admire Pro | 8.00 | fl oz | 1.30 | 10.40 | 12.00 | -\$1.60 | -13.3% |
| Moncut 700DF | 1.00 | lb | 26.60 | 26.60 | 33.45 | -\$6.85 | -20.5% |
| Metribuzin 75DF | 0.67 | lb | 12.50 | 8.38 | 9.82 | -\$1.44 | -14.7% |
| Eptam 7E | 3.50 | pt | 5.80 | 20.30 | 21.88 | -\$1.58 | -7.2% |
| Prowl 3.3EC | 2.00 | pt | 3.25 | 6.50 | 9.80 | -\$3.30 | -33.7% |
| Quadris Flowable | 8.00 | fl oz | 1.65 | 13.20 | 18.40 | -\$5.20 | -28.3% |
| Omega 500DF | 5.50 | fl oz | 3.10 | 17.05 | 18.70 | -\$1.65 | -8.8% |
| Endura | 5.50 | oz | 3.50 | 19.25 | 25.85 | -\$6.60 | -25.5% |
| Bravo Weatherstik | 1.00 | pt | 5.35 | 5.35 | 9.30 | -\$3.95 | -42.5% |
| Dithane F45 Rainshield (2x) | 3.20 | qt | 8.00 | 25.60 | 27.68 | -\$2.08 | -7.5% |
| Ranman | 2.75 | fl oz | 4.50 | 12.38 | 12.93 | -\$0.55 | -4.3% |
| Agri-Mek .75SC | 3.50 | fl oz | 2.50 | 8.75 | 18.20 | -\$9.45 | -51.9% |
| Brigadier | 6.00 | fl oz | 1.30 | 7.80 | 16.20 | -\$8.40 | -51.9% |
| Reglone | 2.00 | pt | 8.55 | 17.10 | 22.60 | -\$5.50 | -24.3% |
| Custom & Consultants: | | | | \$66.75 | \$76.00 | -\$9.25 | -12.2% |
| Custom Fertilize: 400 - 800 lbs | 1.00 | acre | 7.75 | 7.75 | 7.75 | \$0.00 | 0.0% |
| Custom Fertilize: 0 - 400 lbs | 1.00 | acre | 7.50 | 7.50 | 7.25 | \$0.25 | 3.4% |
| Custom Air Spray - 5.0 gal | 3.00 | acre | 8.50 | 25.50 | 35.00 | -\$9.50 | -27.1% |
| Consultant & Soil/Pet. Test | 1.00 | acre | 26.00 | 26.00 | 26.00 | \$0.00 | 0.0% |
| Irrigation: | | | | \$96.04 | \$92.84 | \$3.20 | 3.4% |
| Water Assessment | 1.00 | acre | 37.00 | 37.00 | 35.00 | \$2.00 | 5.7% |
| Irrigation Repairs - Center Pivot | 24.00 | acre-inch | 0.52 | 12.48 | 12.24 | \$0.24 | 2.0% |
| Irrigation Power - Center Pivot | 24.00 | acre-inch | 1.94 | 46.56 | 45.60 | \$0.96 | 2.1% |
| Machinery: | | | | \$116.16 | \$126.65 | -\$10.49 | -8.3% |
| Fuel - Gas | 4.52 | gal | 2.20 | 9.94 | 11.30 | -\$1.36 | -12.0% |
| Fuel - Farm Diesel | 20.47 | gal | 2.00 | 40.94 | 48.10 | -\$7.16 | -14.9% |
| Fuel - Road Diesel | 1.92 | gal | 2.45 | 4.70 | 5.47 | -\$0.77 | -14.0% |
| Lube | 1.00 | \$ | 8.37 | 8.37 | 9.73 | -\$1.36 | -14.0% |
| Machinery Repairs | 1.00 | \$ | 52.20 | 52.20 | 52.04 | \$0.16 | 0.3% |
| Labor: | | | | \$160.36 | \$154.98 | \$5.38 | 3.5% |
| Equipment Operator Labor | 3.88 | hrs | 19.15 | 74.30 | 71.78 | \$2.52 | 3.5% |
| Truck Driver Labor | 1.86 | hrs | 14.90 | 27.71 | 26.78 | \$0.93 | 3.5% |
| Irrigation Labor - Center Pivot | 0.96 | hrs | 19.15 | 18.38 | 17.76 | \$0.62 | 3.5% |
| Irrigation Labor - Chem-Fert | 0.80 | hrs | 19.15 | 15.32 | 14.80 | \$0.52 | 3.5% |
| General Farm Labor | 2.24 | hrs | 11.00 | 24.64 | 23.86 | \$0.78 | 3.3% |
| Sorting: | | | | \$55.10 | \$54.52 | \$0.58 | 1.1% |
| Sorting Labor | 380.00 | cwt | 0.111 | 42.18 | 41.43 | \$0.75 | 1.8% |
| Sorting Equipment Repairs & Power | 380.00 | cwt | 0.034 | 12.92 | 13.09 | -\$0.17 | -1.3% |
| Other: | | | | \$144.98 | \$145.88 | -\$0.90 | -0.6% |
| Crop Insurance: MP + Hail | 1.00 | acre | 80.00 | 80.00 | 80.00 | \$0.00 | 0.0% |
| Fees & Assessments | 361.00 | cwt | 0.18 | 64.98 | 65.88 | -\$0.90 | -1.4% |
| Interest on Operating Capital at 6.00% | | | | \$45.40 | 47.50 | -\$2.10 | -4.4% |
| Total Operating Costs | | | | \$1,499.94 | \$1,669.46 | -\$169.52 | -10.2% |
| Operating Costs per Unit | | | | \$3.95 | \$4.34 | -\$0.39 | -9.0% |
| Net Returns Above Operating Costs | | | | \$1,160.06 | \$1,121.79 | | |

Table E-1 (cont). 2016 Costs to grow, harvest and sort Eastern Idaho Southern region Russet Burbank potatoes.

| Item | Quantity Per Acre | Unit | Price or Cost | Value or Cost/Acre | | | |
|---|----------------------|---------------|------------------|-----------------------|-------------------|------------------|--------------|
| Ownership Costs: | | | | | | | |
| Tractors & Equipment Insurance | | | | 5.21 | 5.06 | \$0.15 | 3.0% |
| Tractors & Equipment Depreciation & Interest | | | | 172.00 | 170.00 | \$2.00 | 1.2% |
| Potato Handling Equipment Deprec. & Interest | | | | 57.00 | 55.50 | \$1.50 | 2.7% |
| Land* | | | | 535.00 | 535.00 | \$0.00 | 0.0% |
| Overhead | | | | 38.00 | 42.00 | -\$4.00 | -9.5% |
| Management Fee | | | | 122.00 | 130.00 | -\$8.00 | -6.2% |
| Total Ownership Costs | | | | \$929.21 | \$937.56 | -\$8.35 | -0.9% |
| Ownership Costs per Unit | | | | \$2.45 | \$2.44 | \$0.01 | 0.4% |
| Total Costs per Acre | | | | \$2,429.15 | \$2,607.02 | -\$177.87 | -6.8% |
| Total Cost per Unit | | | | \$6.39 | \$6.77 | -\$0.38 | -5.6% |
| Returns to Risk | | | | \$230.85 | \$184.23 | | |
| Notes: | | | | | | | |
| *Includes irrigation system ownership costs. | | | | | | | |
| Blue font indicates an increase. | | | | | | | |
| Red font indicates a decrease. | | | | | | | |
| A green font indicates a change in product or procedure to derive the cost. | | | | | | | |
| Procedural changes can result in different costs than were published the previous year. | | | | | | | |
| Breakeven Analysis: | | | | | | | |
| | - | Base | + | | | | |
| | 5% | | 5% | | | | |
| | | Yield | | | | | |
| <u>Price</u> | 361 | 380 | 399 | | | | |
| Operating Cost Breakeven | \$4.15 | \$3.95 | \$3.76 | | | | |
| Ownership Cost Breakeven | \$2.57 | \$2.45 | \$2.33 | | | | |
| Total Cost Breakeven | \$6.73 | \$6.39 | \$6.09 | | | | |
| | | Price | | | | | |
| <u>Yield</u> | \$6.65 | \$7.00 | \$7.35 | | | | |
| Operating Cost Breakeven | 225.6 | 214.3 | 204.1 | | | | |
| Ownership Cost Breakeven | 139.7 | 132.7 | 126.4 | | | | |
| Total Cost Breakeven | 365.3 | 347.0 | 330.5 | | | | |

Table E-2. 2016 Cost per cwt to grow, harvest, sort and store Eastern Idaho Northern region Russet Burbank potatoes based on both field-run and paid yield.

| | Storage Costs | Field Run Cost per Cwt | Paid Yield Cost per Cwt |
|--|-------------------------------------|--|--|
| Field-Run Yield | | 380.00 | |
| Paid Yield % | 95% | | 361.0 |
| Base Cost to Grow, Harvest & Sort | | \$6.39 | \$6.73 |
| Storage System Annual Ownership Costs | \$0.358 | \$0.358 | \$0.377 |
| Base Cost + Storage Ownership Costs | | \$6.75 | \$7.11 |
| Storage System Annual Repairs | \$0.041 | \$0.041 | \$0.043 |
| Base + Storage System Ownership & Repairs | | \$6.79 | \$7.15 |
| | Cumulative Storage Op. Costs | Cumulative Base + All Storage Costs | Cumulative Base + All Storage Costs |
| October | \$0.222 | \$7.01 | \$7.38 |
| November* | \$0.398 | \$7.19 | \$7.57 |
| December | \$0.485 | \$7.28 | \$7.66 |
| January | \$0.576 | \$7.37 | \$7.76 |
| February | \$0.664 | \$7.46 | \$7.85 |
| March | \$0.753 | \$7.54 | \$7.94 |
| April | \$0.945 | \$7.74 | \$8.14 |
| May | \$1.055 | \$7.85 | \$8.26 |
| June | \$1.184 | \$7.98 | \$8.40 |

Data entered directly by user. All other values are calculated.

Calculated values.

*Indicates month when sprout inhibitor applied.

Base cost of production includes cost to grow, harvest & sort potatoes, both operating and ownership.

Ownership costs for potato handling equipment are included in the base cost of production.

Storage system includes: storage facility, air system, and the equipment used to place.

Storage operating costs include: repairs (shown separately), plus monthly operating costs: labor, power, chemicals, interest, shrink & insurance.

Storage costs do not include the cost of removing potatoes from storage.

Cumulative storage operating expenses are calculated to the end of the month.

Appendix F

Southcentral Idaho
Irrigated Russet Burbank Potato
Non-Fumigated

Table F-1. 2016 Costs to grow, harvest and sort Eastern Idaho Northern region Russet Burbank potatoes.

| Item | Quantity Per Acre | Unit | Price or Cost | Value or Cost/Acre | 2015 | Yield Change | |
|--|-------------------|-----------|---------------|--------------------|-------------------|------------------|---------------|
| Gross Returns | | | | | | | |
| Potatoes | 360.00 | cwt | 6.75 | \$2,430.00 | 360 | 0 | 0.0% |
| Total Gross Returns | | | | \$2,430.00 | | | |
| Operating Inputs | | | | | | | |
| Seed: | | | | \$289.80 | \$279.30 | \$10.50 | 3.8% |
| G-3 Russet Burbank Seed | 21.00 | cwt | 12.05 | 253.05 | 243.60 | \$9.45 | 3.9% |
| Seed Cutting | 21.00 | cwt | 1.75 | 36.75 | 35.70 | \$1.05 | 2.9% |
| Fertilizer: | | | | \$294.90 | \$390.90 | -\$96.00 | -24.6% |
| Dry Nitrogen - Preplant | 135.00 | lb | 0.41 | 55.35 | 79.75 | -\$24.40 | -30.6% |
| Dry P2O5 | 155.00 | lb | 0.37 | 57.35 | 82.15 | -\$24.80 | -30.2% |
| K2O | 160.00 | lb | 0.29 | 46.40 | 79.20 | -\$32.80 | -41.4% |
| Sulfur | 80.00 | lb | 0.23 | 18.40 | 27.00 | -\$8.60 | -31.9% |
| Liquid Nitrogen | 105.00 | lb | 0.48 | 50.40 | 58.40 | -\$8.00 | -13.7% |
| Liquid P2O5 | 45.00 | lb | 0.60 | 27.00 | 32.40 | -\$5.40 | -16.7% |
| Micronutrients/Humic Acid - CP | 1.00 | acre | 40.00 | 40.00 | 32.00 | \$8.00 | 25.0% |
| Pesticides & Chemicals: | | | | \$202.90 | \$238.73 | -\$35.83 | -15.0% |
| Seed Treatment | 21.00 | cwt | 0.60 | 12.60 | 10.50 | \$2.10 | 20.0% |
| Admire Pro | 8.00 | fl oz | 1.30 | 10.40 | 12.00 | -\$1.60 | -13.3% |
| Regent 4SC | 3.20 | fl oz | 7.85 | 25.12 | 25.60 | -\$0.48 | -1.9% |
| Metribuzin 75DF | 0.75 | lb | 12.50 | 9.38 | 10.99 | -\$1.61 | -14.7% |
| Outlook 6EC | 18.00 | fl oz | 1.00 | 18.00 | 18.36 | -\$0.36 | -2.0% |
| Prowl 3.3EC | 2.00 | pt | 3.25 | 6.50 | 9.80 | -\$3.30 | -33.7% |
| Quadris Flowable | 8.00 | fl oz | 1.65 | 13.20 | 18.40 | -\$5.20 | -28.3% |
| Bravo ZN | 1.25 | pt | 4.90 | 6.13 | 11.38 | -\$5.25 | -46.2% |
| Endura | 5.50 | oz | 3.50 | 19.25 | 25.85 | -\$6.60 | -25.5% |
| Dithane F45 | 1.60 | qt | 8.00 | 12.80 | 13.84 | -\$1.04 | -7.5% |
| Revus Top | 7.00 | fl oz | 2.25 | 15.75 | 16.94 | -\$1.19 | -7.0% |
| Brigadier | 6.00 | fl oz | 1.30 | 7.80 | 8.10 | -\$0.30 | -3.7% |
| Fulfill WDG | 5.50 | oz | 5.25 | 28.88 | 34.38 | -\$5.50 | -16.0% |
| Reglone | 2.00 | pt | 8.55 | 17.10 | 22.60 | -\$5.50 | -24.3% |
| Custom & Consultants: | | | | \$58.25 | \$67.25 | -\$9.00 | -13.4% |
| Custom Fertilize: 400 - 800 lbs | 1.00 | acre | 7.75 | 7.75 | 7.75 | \$0.00 | 0.0% |
| Custom Fertilize: 0 - 400 lbs | 1.00 | acre | 7.50 | 7.50 | 7.25 | \$0.25 | 3.4% |
| Custom Air Spray - 5.0 gal | 2.00 | acre | 8.50 | 17.00 | 26.25 | -\$9.25 | -35.2% |
| Consultant & Soil/Pet. Test | 1.00 | acre | 26.00 | 26.00 | 26.00 | \$0.00 | 0.0% |
| Irrigation: | | | | \$69.08 | \$67.68 | \$1.40 | 2.1% |
| Water Assessment | 1.00 | acre | 12.50 | 12.50 | 12.25 | \$0.25 | 2.0% |
| Irrigation Repairs - Center Pivot | 23.00 | acre-inch | 0.52 | 11.96 | 11.73 | \$0.23 | 2.0% |
| Irrigation Power - Center Pivot | 23.00 | acre-inch | 1.94 | 44.62 | 43.70 | \$0.92 | 2.1% |
| Machinery: | | | | \$115.71 | \$126.53 | -\$10.82 | -8.6% |
| Fuel - Gas | 4.51 | gal | 2.20 | 9.92 | 11.28 | -\$1.35 | -12.0% |
| Fuel - Farm Diesel | 21.30 | gal | 2.00 | 42.60 | 50.06 | -\$7.46 | -14.9% |
| Fuel - Road Diesel | 1.91 | gal | 2.45 | 4.68 | 5.44 | -\$0.76 | -14.0% |
| Lube | 1.00 | \$ | 8.61 | 8.61 | 10.01 | -\$1.40 | -14.0% |
| Machinery Repairs | 1.00 | \$ | 49.90 | 49.90 | 49.75 | \$0.15 | 0.3% |
| Labor: | | | | \$162.03 | \$156.59 | \$5.44 | 3.5% |
| Equipment Operator Labor | 4.03 | hrs | 19.15 | 77.17 | 74.56 | \$2.62 | 3.5% |
| Truck Driver Labor | 1.86 | hrs | 14.90 | 27.71 | 26.78 | \$0.93 | 3.5% |
| Irrigation Labor - Center Pivot | 0.92 | hrs | 19.15 | 17.62 | 17.02 | \$0.60 | 3.5% |
| Irrigation Labor - Chem-Fert | 0.76 | hrs | 19.15 | 14.55 | 14.06 | \$0.49 | 3.5% |
| General Farm Labor | 2.27 | hrs | 11.00 | 24.97 | 24.18 | \$0.79 | 3.3% |
| Sorting: | | | | \$52.20 | \$50.98 | \$1.22 | 2.4% |
| Sorting Labor | 360.00 | cwt | 0.111 | 39.96 | 38.74 | \$1.22 | 3.2% |
| Sorting Equipment Repairs & Power | 360.00 | cwt | 0.034 | 12.24 | 12.24 | \$0.00 | 0.0% |
| Other: | | | | \$131.56 | \$131.56 | \$0.00 | 0.0% |
| Crop Insurance: MP + Hail | 1.00 | acre | 70.00 | 70.00 | 70.00 | \$0.00 | 0.0% |
| Fees & Assessments | 342.00 | cwt | 0.18 | 61.56 | 61.56 | \$0.00 | 0.0% |
| Interest on Operating Capital at 6.00% | | | | \$42.55 | 44.15 | -\$1.60 | -3.6% |
| Total Operating Costs | | | | \$1,418.98 | \$1,553.67 | -\$134.69 | -8.7% |
| Operating Costs per Unit | | | | \$3.94 | \$4.32 | -\$0.37 | -8.7% |
| Net Returns Above Operating Costs | | | | \$1,011.02 | \$966.33 | | |

Table F-1 (cont). 2016 Costs to grow, harvest and sort Eastern Idaho Northern region Russet Burbank potatoes.

| Item | Quantity Per Acre | Unit | Price or Cost | Value or Cost/Acre | | | |
|---|-------------------|---------------|---------------|--------------------|-------------------|------------------|--------------|
| Ownership Costs: | | | | | | | |
| Tractors & Equipment Insurance | | | | 5.23 | 5.08 | \$0.15 | 3.0% |
| Tractors & Equipment Depreciation & Interest | | | | 172.00 | 170.00 | \$2.00 | 1.2% |
| Potato Handling Equipment Deprec. & Interest | | | | 53.00 | 52.00 | \$1.00 | 1.9% |
| Land* | | | | 440.00 | 440.00 | \$0.00 | 0.0% |
| Overhead | | | | 35.50 | 39.00 | -\$3.50 | -9.0% |
| Management Fee | | | | 112.00 | 119.00 | -\$7.00 | -5.9% |
| Total Ownership Costs | | | | \$817.73 | \$825.08 | -\$7.35 | -0.9% |
| Ownership Costs per Unit | | | | \$2.27 | \$2.29 | -\$0.02 | -0.9% |
| Total Costs per Acre | | | | \$2,236.71 | \$2,378.75 | -\$142.04 | -6.0% |
| Total Cost per Unit | | | | \$6.21 | \$6.61 | -\$0.39 | -6.0% |
| Returns to Risk | | | | \$193.29 | \$141.25 | | |
| Notes: | | | | | | | |
| *Includes irrigation system ownership costs. | | | | | | | |
| Blue font indicates an increase. | | | | | | | |
| Red font indicates a decrease. | | | | | | | |
| A green font indicates a change in product or procedure to derive the cost. | | | | | | | |
| Procedural changes can result in different costs than were published the previous year. | | | | | | | |
| Breakeven Analysis: | | | | | | | |
| | - | Base | + | | | | |
| | 5% | | 5% | | | | |
| | | Yield | | | | | |
| <u>Price</u> | 342 | 360 | 378 | | | | |
| Operating Cost Breakeven | \$4.15 | \$3.94 | \$3.75 | | | | |
| Ownership Cost Breakeven | \$2.39 | \$2.27 | \$2.16 | | | | |
| Total Cost Breakeven | \$6.54 | \$6.21 | \$5.92 | | | | |
| | | Price | | | | | |
| <u>Yield</u> | \$6.41 | \$6.75 | \$7.09 | | | | |
| Operating Cost Breakeven | 221.3 | 210.2 | 200.2 | | | | |
| Ownership Cost Breakeven | 127.5 | 121.1 | 115.4 | | | | |
| Total Cost Breakeven | 348.8 | 331.4 | 315.6 | | | | |

Table F-2. 2016 Cost per cwt to grow, harvest, sort and store Eastern Idaho Northern region Russet Burbank potatoes based on both field-run and paid yield.

| | Storage Costs | Field Run Cost per Cwt | Paid Yield Cost per Cwt |
|--|------------------------------|-------------------------------------|-------------------------------------|
| Field-Run Yield | | 360.00 | |
| Paid Yield % | 95% | | 342.0 |
| Base Cost to Grow, Harvest & Sort | | \$6.21 | \$6.54 |
| Storage System Annual Ownership Costs | \$0.358 | \$0.358 | \$0.377 |
| Base Cost + Storage Ownership Costs | | \$6.57 | \$6.92 |
| Storage System Annual Repairs | \$0.041 | \$0.041 | \$0.043 |
| Base + Storage System Ownership & Repairs | | \$6.61 | \$6.96 |
| | Cumulative Storage Op. Costs | Cumulative Base + All Storage Costs | Cumulative Base + All Storage Costs |
| October | \$0.222 | \$6.83 | \$7.19 |
| November* | \$0.398 | \$7.01 | \$7.38 |
| December | \$0.485 | \$7.10 | \$7.47 |
| January | \$0.576 | \$7.19 | \$7.57 |
| February | \$0.664 | \$7.28 | \$7.66 |
| March | \$0.753 | \$7.37 | \$7.75 |
| April | \$0.945 | \$7.56 | \$7.95 |
| May | \$1.055 | \$7.67 | \$8.07 |
| June | \$1.184 | \$7.80 | \$8.21 |

Data entered directly by user. All other values are calculated.

Calculated values.

* Indicates month when sprout inhibitor applied.

Base cost of production includes cost to grow, harvest & sort potatoes, both operating and ownership. Ownership costs for potato handling equipment are included in the base cost of production.

Storage system includes: storage facility, air system, and the equipment used to place.

Storage operating costs include: repairs (shown separately), plus monthly operating costs: labor, power, chemicals, interest, shrink & insurance.

Storage costs do not include the cost of removing potatoes from storage.

Cumulative storage operating expenses are calculated to the end of the month.

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